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ABSTRACT

These proceedings contain presentations and materials, including transparency masters, used by presenters, that provide practical experiences in different components of competency-based vocational education (CBVE) curriculum. Introductory materials include the agenda, brief description of sessions, names and addresses of presenters, and evaluation instruments. Presentations include "Adapting Curriculum for CBVE" (Gerry Day); "Principles of Technology" (Jay Wood); "Applied Communications" (Jay Wood); "Applied Math" (Jay Wood); "The Occupational Articulation Database: A System for Managing the Articulation Process" (Greg Harpole); "CBVE for Special Needs Students" (Michelle Sarkees); "CBVE--What It Is and What It Isn't" (John Horton); "Counseling Tools: Assessment Link" (Chuck Mollerup, Cheryl Buhl); "Curriculum Alignment" (Harley Schlichting); "DACUM/DATA (Developing a Curriculum/Developing a Task Analysis)" (Gary Mitchell, Bruce Koch); "Instructional Techniques Session" (Peter Mahr); "Introduction to CBVE" (Ron Mehrer); "Orientation to Applied Subjects" (Larry McClure); "Testing" (Brenda Hattaway); "Writing Performance Objectives" (Jim Stewart); and "Youth Employment Competencies" (Renee Matson). Materials may include learning modules for instructor development; articles; examples; reports; instruments; guides; course outlines; and competency lists. (YLB)

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NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION

October 18-20, 1989

Welcome to the Sixth Annual Northwest Conference on Competency-Based Vocational Education. Our goal is to provide you with practical experiences in different components of competency-based curriculum. By combining the resources of Idaho, Oregon, and Washington, we are able to bring in the best presenters. We hope you find the information valuable and useful when you return to your setting.

Please give us a call if you have questions or suggestions when you get home. We will be glad to provide any further help that we can.

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NORTHWEST CONFERENCE

OCTOBER 18-20, 1989

AGENDA

WEDNESDAY, OCTOBER 18

8:00 - 5:30	REGISTRATION		
10:00 - 11:30	PRESESSIONS		
	Introduction to CBVE	[illegible] Mehrer	(*Summitt/Mountain*)
	Orientation to the Applied Subjects: Applied Math Applied Communications Principles of Technology Applied Biology/Chemistry	Larry McClure	(*Cascade*)
11:30 - 1:00	Lunch - on Your Own		
1:00 - 2:15	GENERAL SESSION		
	• Introductions/Welcome	Don Eshelby/ Wanda Monthey/ Walt Wong/ Monty Multanen, Associate Superintendent	(*Main Convention*)
	• CBVE & Industry Training	Bob Benedict, Director, GM Training Center	
2:15 - 2:30	Break/Wall Change		
2:30 - 4:00	INTEREST SESSIONS		
	CBVE: What it is-- What it isn't	John Horton	(*Summitt*)
	Applied Math	Don Fineran/ Jay Wood/ Foy Fields	(*Cascade N.*)
	Counseling Link	Chuck Mollerup/ Cheryl Buhl	(*Mountain*)
	Program Planning	Nancy Hargis/ Ron McCage	(*Hearth*)
	Applied Physics (PT/UTC)	Rob Campbell/ Ray Thiess/ Jay Wood	(*Cascade S.*)

4:00 - 5:30	Introduction to CBVE	Ron Mehrer	(*Mountain*)
	Applied Communications	Barbara Wolfe/ Bill Walker/ Michelle Walker	(*Cascade N.*)
	What it is-- What it isn't	John Horton	(*Summitt*)
	Program Planning	Nancy Hargis/ Ron McCage	(*Hearth*)
	Applied Physics	Ray Thiess/ Rob Campbell/ Jay Wood	(*Cascade S.*)
5:30 - 7:00	Subject Area Get Togethers		

THURSDAY, OCTOBER 19

7:30 - 8:30	Roundtable - Continental Breakfast		
8:30 - 10:00	An Articulation Management Process	Greg Harpole	(*Penthouse*)
	Applied Communications	Lynn Meeks	(*Cascade N.*)
	Adapting Materials for CBVE (3 hours)	Gerry Day	(*Summitt*)
	DACUM/DATA (3 hours)	Gary Mitchell/ Bruce Koch	(*Cascade S.*)
	Curriculum Alignment (3 hours)	Harley Schlichting	(*Mountain*)
10:00 - 10:15	BREAK		
10:15 - 11:45	Applied Math	Don Fineran/ Jay Wood/ Foy Fields	(*Cascade N.*)
	Counseling Link	Chuck Mollerup/ Cheryl Buhl	(*Penthouse*)
12:00 - 12:50	Lunch		(*Main Convention*)
1:00 - 2:00	The Student's Viewpoint	Vocational Village	(*Main Convention*)
2:15 - 3:45	Testing	Brenda Hattaway	(*Cascade N.*)
	Youth Employment Competencies	Renee Matson	(*Condo*)
	CBVE for Special Needs Students	Mickey Sarkees	(*Summitt*)
2:15 - 5:30	Curriculum Alignment (3 hours)	Harley Schlichting	(*Mountain*)
	Writing Performance Objectives (3 hours)	Jim Stewart	(*Cascade S.*)
	Learning Styles (3 hours)	Jack Kaufman	(*Penthouse*)
4:00 - 5:30	Instructional Techniques	Peter Mahr	(*Cascade N.*)
	CBVE for Special Needs Students	Mickey Sarkees	(*Summitt*)

6:00	Social
7:00	Dinner

FRIDAY, OCTOBER 20

7:30 - 8:30	Continental Breakfast		
8:30 - 11:45	Learning Styles (3 hours)	Jack Kaufman	(*Penthouse*)
	DACUM/DATA (3 hours)	Gary Mitchell/ Bruce Koch	(*Cascade N.*)
	Writing Performance Objectives (3 hours)	Jim Stewart	(*Cascade S.*)
	Adapting Material for CBVE (3 hours)	Gerry Day	(*Summitt*)
	Curriculum Alignment (3 hours)	Harley Schlichting	(*Mountain*)
10:00	Break		
12:00 - 1:00	Lunch		(*Main Convention*)
1:00 - 1:45	Employer Perspective	Panel-Marilyn Hess/ Mike Bir/ Tom Jefferson Moderator: Larry McClure	(*Main Convention*)
2:00 - 3:30	Instructional Techniques	Peter Mahr	(*Summitt*)
	Testing	Brenda Hattaway	(*Mountain*)
	Youth Employment Competencies	Renee Matson	(*Penthouse*)
	An Articulation Management Process	Greg Harpole	(*Cascade*)

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BRIEF DESCRIPTION OF THE SESSIONS

ADAPTING EXISTING MATERIAL TO CBVE (3 hour session offered twice)

Implementing CBVE involves a change in the organizational process and a modification of the materials used in the program. A suggested method of modification will be described and examples provided for specific conditions.

APPLIED ACADEMICS IN THE VOCATIONAL SETTING (All sessions are 1½ hour sessions offered twice) (1) Applied Communications, (2) Applied Math, (3) Applied Physics.

A discussion of the various ways local schools/colleges can implement the applied academic courses into the vocational setting to increase the knowledge and skill level of students in communications, science, and math. Requirements will be provided by state level personnel from these states. Suggestions for improving the classroom setting for those who want to increase basic skill learning will also be provided.

ARTICULATION MANAGEMENT PROCESS (1½ hour session offered twice)

This session will describe a process that can be followed in managing Competency Based Vocational Education (CBVE) programs. A variety of resources will be discussed, including V-TECS and a computer management system.

CBVE FOR SPECIAL NEEDS STUDENTS (1½ hour session presented twice)

CBVE is not limited to the regular student in the classroom. CBVE is especially suited to meet the individual needs of students with special learning disabilities. Using CBVE with special needs students including at-risk populations will be described.

CBVE--WHAT IT IS -- WHAT IT ISN'T (1½ hour session offered twice)

CBVE has been around for a number of years and, like other environments, it has changed to meet the growing needs of our schools and industries. The changes and implications for updating your program will be discussed in detail.

COUNSELING LINK (1½ hour session offered twice)

A program that links the results of counseling tests with the Career Information System will be demonstrated. A computer program employed through support from the National Occupational Information Coordinating Council by state personnel was designed to help students determine career choices.

CURRICULUM ALIGNMENT (3 hour sessions offered twice)

Matching instructional resources to student goals and outcomes. Procedures--The common elements (components) of CBVE should be sequenced and aligned to maximize learning opportunities for students.

DACUM/DATA (3 hour session offered twice)

The process of developing an effective curriculum depends on the quality of the content in the curriculum. To obtain quality content, one must construct a valid task list and subject it to the scrutiny of incumbent workers. The DACUM process will be discussed and a validation process used by Spokane Community College will be presented in detail.

EMPLOYER PERSPECTIVE (Panel General Session)

One of the most critical elements in the CBVE process is the perspective of the employers of graduates from vocational education programs. We utilize their expertise and resources when developing curriculum and on our advisory committees. We must listen to them when they express their opinions. Often, we do not get an opportunity to hear them clearly. The General Session will feature a panel of employers who strive to get the best from employees and vocational programs.

INSTRUCTIONAL TECHNIQUES (1½ hour session offered twice)

A vocational teacher will present his ideas on the most effective instructional techniques to use in a CBVE program. Tools used in daily classroom and laboratory settings will be described and discussed.

INTRODUCTION TO CBVE (1½ hour session offered twice)

The major elements of CBVE will be discussed and presented to provide a basic understanding of the advantages provided to students in a CBVE environment.

LEARNING STYLES (3 hour sessions offered twice)

The art of teaching is the art of blending aptitudes and ambitions of the students with the knowledge and skill of the instructor. Determining how to teach by learning how students learn provides teachers new classroom skills.

ORIENTATION TO APPLIED SUBJECTS (Pre-session)

An overview and rationale of National Consortia efforts for curriculum development. Projects addressed will include Applied Communications, Applied Math, Principles of Technology, Applied Biology/Chemistry, Exploring Technology Education, and Employability Skills.

PROGRAM PLANNING FOR CBVE (1½ hour session offered twice)

Using V-TECS and labor market information, one can design a training program. Planning for specific training requirements of industry is easier now.

RESOURCE DISPLAY (Open sessions - No time limit)

Four extremely important resources to vocational education will be available for open discussion of their services and products.

Vocational Technical Education Consortium of States (V-TECS) will have representatives on hand to provide you with the latest and most effective displays of curriculum development material in the nation. V-TECS catalogs and guides are utilized more often than any other source by schools and states involved in curriculum activity. A computerized model for identifying tasks and test items will be available.

The **Northwest Curriculum Coordinating Center** (NWCCC) staff will be available to answer any questions you may have in obtaining the most current curriculum and instructional materials from across the nation. The NWCCC is one of six Centers funded by the Office of Education to coordinate the curriculum development and dissemination efforts of the 56 states and territories. The Center utilizes electronic mail to request assistance for instructors in the states represented in its ten-state area. Idaho, Washington, and Oregon are members of the region served by the NWCCC. This is a valuable resource. Get to know the staff.

The **Northwest Regional Education Laboratory** (NWREL) is a service oriented agency that serves the northwestern states as a research support entity. The staff at NWREL have conducted many successful studies for Washington, Oregon, and Idaho Departments of Vocational Education. Products will be displayed and staff will be available to provide information and answer questions on current trends in vocational education.

The executive director of the **Mid-America Vocational Curriculum Consortium** (MAVCC) will be available to discuss and describe the many curriculum packages developed by MAVCC for its member states. The competency based curriculum manuals are available in both teacher and students versions for instruction utilization in any classroom in America.

STUDENT VIEWPOINTS (General session)

How can vocational education improve the future of students? Students from a vocational school will describe their feelings about their future and how vocational programs fit into the picture.

TESTING IN A CBVE PROGRAM (1½ hour session offered twice)

A discussion of competency testing including available tests and test item banks.

WRITING PERFORMANCE OBJECTIVES (3 hour session offered twice)

Participants will write performance objectives which describe the detail required to meet industry's needs. This is a working session. All participants will develop objectives for their own course of study.

YOUTH EMPLOYMENT COMPETENCIES (1½ hour session offered twice)

JTPA and Private Industry Councils (PIC) are required to use Youth Employment Competencies as a measurement of success in training. This session will describe some useful tools and methods to provide schools with materials which will meet the needs of the students and JTPA.

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SUMMARY OF SESSIONS

Introduction to CBVE	Wednesday	10:00 - 11:30
(1½ hour session)		4:00 - 5:30
Orientation to the Applied Subjects	Wednesday	10:00 - 11:30
(1½ hour session)		
CBVE and Industry Training	Wednesday	1:30 - 2:15
(general session)		
CBVE: What it is -- What it isn't	Wednesday	2:30 - 4:00
(1½ hour session)		4:00 - 5:30
Applied Math	Wednesday	2:30 - 4:00
(1½ hour sessions)	Thursday	10:15 - 11:45
Program Planning	Wednesday	2:30 - 4:00
(1½ hour session)		4:00 - 5:30
Applied Physics (PT-UTC)	Wednesday	2:30 - 4:00
(1½ hour session)		4:00 - 5:30
Applied Communications	Wednesday	4:00 - 5:30
(1½ hour session)	Thursday	8:30 - 10:00
An Articulation Management Process	Thursday	8:30 - 10:00
(1½ hour session)	Friday	2:00 - 3:30
Adapting Materials for CBVE	Thursday	8:30 - 11:45
(3 hour session)	Friday	8:30 - 11:45
DACUM/DATA	Thursday	8:30 - 11:45
(3 hour session)	Friday	8:30 - 11:45
Curriculum Alignment	Thursday	8:30 - 11:45
(3 hour session)		2:15 - 5:30
	Friday	8:30 - 11:45
The Student's Viewpoint	Thursday	1:00 - 2:00
(1 hour session)		
Testing	Thursday	2:15 - 3:45
(1½ hour session)	Friday	2:00 - 3:30
Youth Employment Competencies	Thursday	2:15 - 3:45
(1½ hour session)	Friday	2:00 - 3:30

CBVE for Special Needs Students	Thursday	2:15 - 3:45
(1½ hour session)		4:00 - 5:30
Writing Performance Objectives	Thursday	2:15 - 5:30
(3 hour session)	Friday	8:30 - 11:45
Learning Styles	Thursday	2:15 - 5:30
(3 hour session)	Friday	8:30 - 11:45
Instructional Techniques	Thursday	4:00 - 5:30
(1½ hour session)	Friday	2:00 - 3:30
Employer Perspective	Friday	1:00 - 1:45
Subject Area Get Together	Wednesday	5:30 - 7:00
Resource Display V-TECS NWCCC NWREL	Open Sessions	No time limits

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SCHEDULE PLANNER

	1st Choice	2nd Choice
Wednesday		
10:00 - 11:30		
1:00 - 2:15	GENERAL SESSION	
2:30 - 4:00		
4:00 - 5:30		
Thursday		
8:30 - 10:00		
10:15 - 11:45		
1:00 - 2:00	GENERAL SESSION	
2:15 - 5:30		
2:15 - 3:45		
4:00 - 5:30		
Friday		
8:30 - 11:45		
1:00 - 1:45	GENERAL SESSION	
2:00 - 3:30		

NOTES:

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NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION
Overall Evaluation and Comment Sheet

What is your background?

Secondary: Instructor ☐
Administrator ☐

Postsecondary/Community College: Instructor ☐
Administrator ☐

Private Vocational School: Instructor ☐
Administrator ☐

State Department Staff ☐

List Other ____________________

Directions for Evaluation

Carefully read and evaluate each statement and circle the rating that most nearly expresses your opinion of the statement. Each statement has dual response categories--Perceived Importance and Perceived Utility. Answer both response categories.

Perceived Importance: This response category relates to your opinion of program structure; e.g., did the content of each session warrant inclusion in this conference?

Perceived Utility: This response category relates to your opinion of whether or not the content of each session will be useful to you in your local setting.

The rating scale is a 1-5 type with 5 denoting highest importance and 1 denoting the lowest importance or value. You do not necessarily have to rate Importance the same as Utility, as each has a different meaning.

RATINGS OF SESSIONS

Perceived Importance low high		Perceived Utility low high
1 2 3 4 5	1. CBVE for Special Needs & Students	1 2 3 4 5
1 2 3 4 5	2. Employer Perspective	1 2 3 4 5
1 2 3 4 5	3. Articulation Management Process	1 2 3 4 5
1 2 3 4 5	4. Instructional Techniques	1 2 3 4 5

Perceived Importance						Perceived Utility				
low				high		low				high
1	2	3	4	5	5. Introduction to CBVE	1	2	3	4	5
1	2	3	4	5	6. Program Planning for CBVE	1	2	3	4	5
1	2	3	4	5	7. Testing in a CBVE Program	1	2	3	4	5
1	2	3	4	5	8. DACUM/DATA	1	2	3	4	5
1	2	3	4	5	9. Writing Performance Objectives	1	2	3	4	5
1	2	3	4	5	10. Youth Employment Competencies	1	2	3	4	5
1	2	3	4	5	11. Learning Styles	1	2	3	4	5
1	2	3	4	5	12. Counseling Link	1	2	3	4	5
1	2	3	4	5	13. Resources in Vocational Education (Display Area)	1	2	3	4	5
1	2	3	4	5	14. Adapting Existing Materials to CBVE	1	2	3	4	5
1	2	3	4	5	15. CBVE--What it is--What it isn't	1	2	3	4	5
1	2	3	4	5	16. Applied Academics in a Vocational Setting	1	2	3	4	5
1	2	3	4	5	17. Student Viewpoints	1	2	3	4	5
1	2	3	4	5	18. Curriculum Alignment	1	2	3	4	5
1	2	3	4	5	19. Orientation to Applied Subjects - Communications	1	2	3	4	5
1	2	3	4	5	20. Orientation to Applied Subjects - Math	1	2	3	4	5
1	2	3	4	5	21. Orientation to Applied Subjects - Physics	1	2	3	4	5

Would you attend another conference like this one next year?

[ ] No
[ ] Yes [ ] At same time? [ ] Prefer other time?
(Please specify) ____________________
____

Comments: Please let us know how you felt about arrangements, length of time, location, or other factors. List topics you would like to see added, if any.

____

____

Thank you for your participation.

NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION

Evaluation Form

SESSION: CBVE for Special Needs Students

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

1 = Very low, very poor, of little use or importance
2 = Somewhat useful
3 = Better than I expected--very useful
4 = Very high, outstanding, excellent, extremely useful

Please CIRCLE your response.

	LOW			HIGH
1. How would you rate the overall quality of the presentation?	1	2	3	4
2. Will the information presented benefit you and/or your vocational program?	1	2	3	4
3. Will you be able to adapt the material/information for use in your program/area?	1	2	3	4
4. Would you recommend this presentation to other vocational educators?	1	2	3	4
5. How thorough do you feel the topic was covered?	1	2	3	4

Comments: ____________________

NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION

Evaluation Form

SESSION: Employer Perspective

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

1 = Very low, very poor, of little use or importance
2 = Somewhat useful
3 = Better than I expected--very useful
4 = Very high, outstanding, excellent, extremely useful

Please CIRCLE your response.

		LOW		HIGH	
1.	How would you rate the overall quality of the presentation?	1	2	3	4
2.	Will the information presented benefit you and/or your vocational program?	1	2	3	4
3.	Will you be able to adapt the material/information for use in your program/area?	1	2	3	4
4.	Would you recommend this presentation to other vocational educators?	1	2	3	4
5.	How thorough do you feel the topic was covered?	1	2	3	4

Comments: ____

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NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION

Evaluation Form

SESSION: Articulation Management Process

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

1 = Very low, very poor, of little use or importance
2 = Somewhat useful
3 = Better than I expected--very useful
4 = Very high, outstanding, excellent, extremely useful

Please CIRCLE your response.

		LOW		HIGH	
1.	How would you rate the overall quality of the presentation?	1	2	3	4
2.	Will the information presented benefit you and/or your vocational program?	1	2	3	4
3.	Will you be able to adapt the material/information for use in your program/area?	1	2	3	4
4.	Would you recommend this presentation to other vocational educators?	1	2	3	4
5.	How thorough do you feel the topic was covered?	1	2	3	4

Comments: ____

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Evaluation Form

SESSION: Instructional Techniques

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

1 = Very low, very poor, of little use or importance
2 = Somewhat useful
3 = Better than I expected--very useful
4 = Very high, outstanding, excellent, extremely useful

Please CIRCLE your response.

		LOW			HIGH
1.	How would you rate the overall quality of the presentation?	1	2	3	4
2.	Will the information presented benefit you and/or your vocational program?	1	2	3	4
3.	Will you be able to adapt the material/information for use in your program/area?	1	2	3	4
4.	Would you recommend this presentation to other vocational educators?	1	2	3	4
5.	How thorough do you feel the topic was covered?	1	2	3	4

Comments: ______________________________

NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION

Evaluation Form

SESSION: Introduction to CBVE

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

1 = Very low, very poor, of little use or importance
2 = Somewhat useful
3 = Better than I expected--very useful
4 = Very high, outstanding, excellent, extremely useful

Please CIRCLE your response.

	LOW		HIGH	
1. How would you rate the overall quality of the presentation?	1	2	3	4
2. Will the information presented benefit you and/or your vocational program?	1	2	3	4
3. Will you be able to adapt the material/information for use in your program/area?	1	2	3	4
4. Would you recommend this presentation to other vocational educators?	1	2	3	4
5. How thorough do you feel the topic was covered?	1	2	3	4

Comments: ____

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NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION

Evaluation Form

SESSION: Program Planning for CBVE

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

1 = Very low, very poor, of little use or importance
2 = Somewhat useful
3 = Better than I expected--very useful
4 = Very high, outstanding, excellent, extremely useful

Please CIRCLE your response.

		LOW		HIGH	
1.	How would you rate the overall quality of the presentation?	1	2	3	4
2.	Will the information presented benefit you and/or your vocational program?	1	2	3	4
3.	Will you be able to adapt the material/information for use in your program/area?	1	2	3	4
4.	Would you recommend this presentation to other vocational educators?	1	2	3	4
5.	How thorough do you feel the topic was covered?	1	2	3	4

Comments: ____

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Evaluation Form

SESSION: Testing in a CBVE Program

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

1 = Very low, very poor, of little use or importance
2 = Somewhat useful
3 = Better than I expected--very useful
4 = Very high, outstanding, excellent, extremely useful

Please CIRCLE your response.

		LOW		HIGH	
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5.	How thorough do you feel the topic was covered?	1	2	3	4

Comments: ______________________________

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Evaluation Form

SESSION: DACUM/DATA

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

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Please CIRCLE your response.

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5.	How thorough do you feel the topic was covered?	1	2	3	4

Comments: ____________________

NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION

Evaluation Form

SESSION: Writing Performance Objectives

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

1 = Very low, very poor, of little use or importance
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4. Would you recommend this presentation to other vocational educators?	1	2	3	4
5. How thorough do you feel the topic was covered?	1	2	3	4

Comments: ______________________________

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NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION

Evaluation Form

SESSION: Youth Employment Competencies

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

1 = Very low, very poor, of little use or importance
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Please CIRCLE your response.

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4.	Would you recommend this presentation to other vocational educators?	1	2	3	4
5.	How thorough do you feel the topic was covered?	1	2	3	4

Comments: ____

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NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION

Evaluation Form

SESSION: Learning Styles

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

1 = Very low, very poor, of little use or importance
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4. Would you recommend this presentation to other vocational educators?	1	2	3	4
5. How thorough do you feel the topic was covered?	1	2	3	4

Comments: ______________________________

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NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION

Evaluation Form

SESSION: Counseling Link

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

1 = Very low, very poor, of little use or importance
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4 = Very high, outstanding, excellent, extremely useful

Please CIRCLE your response.

		LOW		HIGH	
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3.	Will you be able to adapt the material/information for use in your program/area?	1	2	3	4
4.	Would you recommend this presentation to other vocational educators?	1	2	3	4
5.	How thorough do you feel the topic was covered?	1	2	3	4

Comments: ____

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NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION

Evaluation Form

SESSION: CBVE--What it is--What it isn't

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

1 = Very low, very poor, of little use or importance
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Please CIRCLE your response.

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Comments: ____________________

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NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION

Evaluation Form

SESSION: Applied Academics in a Vocational Setting

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

1 = Very low, very poor, of little use or importance
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4.	Would you recommend this presentation to other vocational educators?	1	2	3	4
5.	How thorough do you feel the topic was covered?	1	2	3	4

Comments: ____

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NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION

Evaluation Form

SESSION: Student Viewpoints

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

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Please CIRCLE your response.

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5.	How thorough do you feel the topic was covered?	1	2	3	4

Comments: ____

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NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION

Evaluation Form

SESSION: Curriculum Alignment

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

1 = Very low, very poor, of little use or importance
2 = Somewhat useful
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Please CIRCLE your response.

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5.	How thorough do you feel the topic was covered?	1	2	3	4

Comments:

NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION

Evaluation Form

SESSION: Orientation to Applied Subjects - Communications

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

1 = Very low, very poor, of little use or importance
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Please CIRCLE your response.

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1.	How would you rate the overall quality of the presentation?	1	2	3	4
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4.	Would you recommend this presentation to other vocational educators?	1	2	3	4
5.	How thorough do you feel the topic was covered?	1	2	3	4

Comments: ______________________________

Evaluation Form

SESSION: Orientation to Applied Subjects - Math

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

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3 = Better than I expected--very useful
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Please CIRCLE your response.

		LOW		HIGH	
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2.	Will the information presented benefit you and/or your vocational program?	1	2	3	4
3.	Will you be able to adapt the material/information for use in your program/area?	1	2	3	4
4.	Would you recommend this presentation to other vocational educators?	1	2	3	4
5.	How thorough do you feel the topic was covered?	1	2	3	4

Comments:

NORTHWEST CONFERENCE ON COMPETENCY-BASED VOCATIONAL EDUCATION

Evaluation Form

SESSION: Orientation to Applied Subjects - Physics

Please help us improve the quality of our presentations. Use the rating scale below to answer the following questions:

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5.	How thorough do you feel the topic was covered?	1	2	3	4

Comments: ______________________________

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ADAPTING CURRICULUM FOR CBVE

Presentation to the

Northwest Conference on CBVE
Bend, Oregon
October 18-20, 1989

by

DR. GERALD DAY

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Division of Vocational-Technical Education
Maryland State Department of Education

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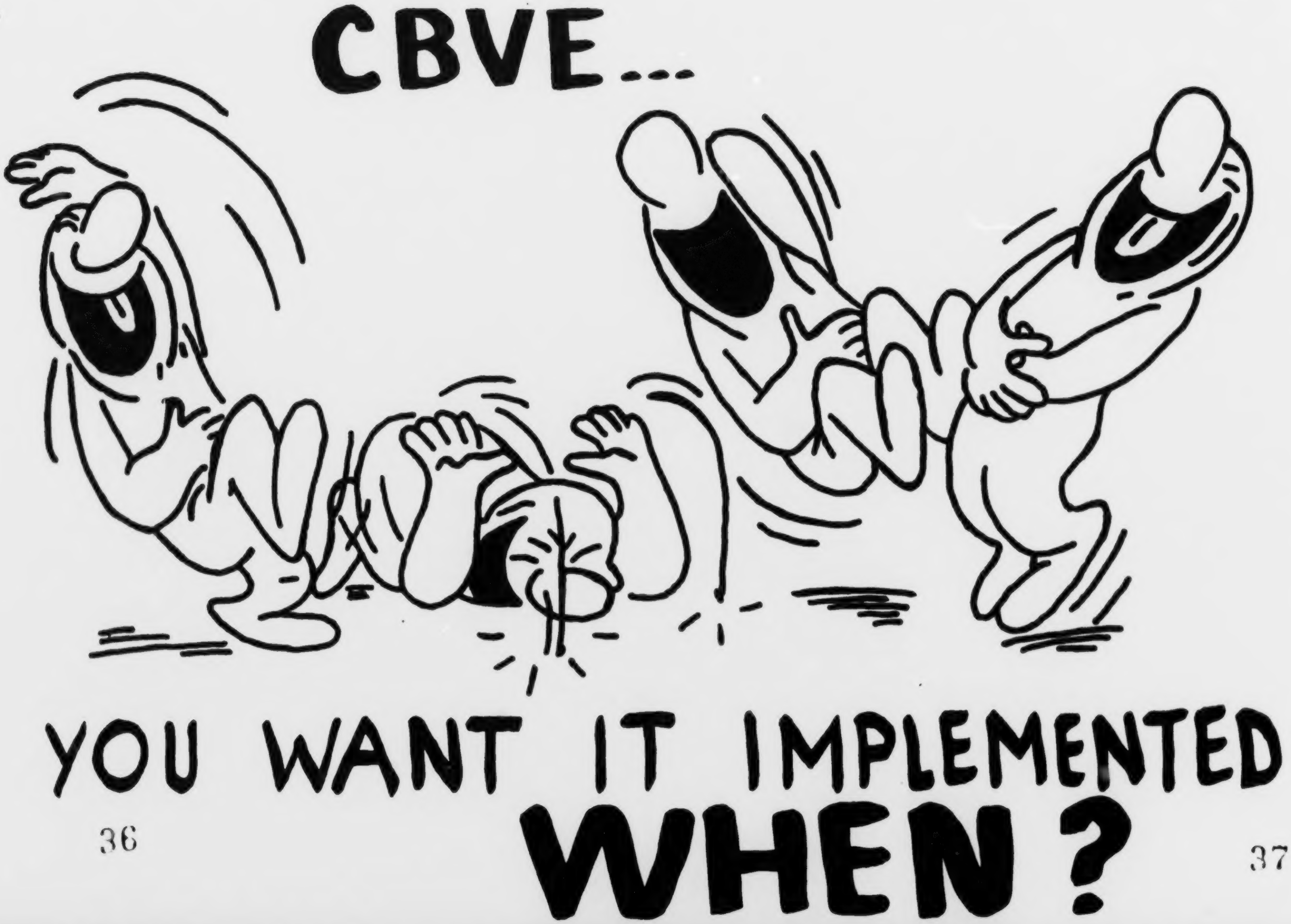
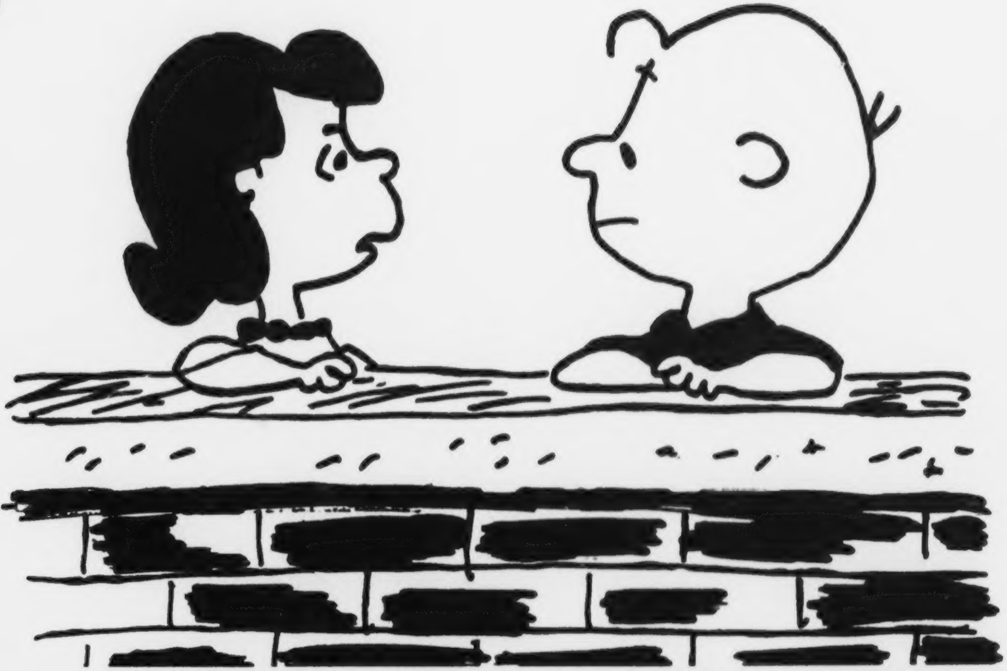

CBVE...
YOU WANT IT IMPLEMENTED
WHEN?



YOU KNOW, THAT COMPETENCY-BASED VOCATIONAL EDUCATION IS ALMOST SCARY. IF YOU DON'T KEEP YOUR GUARD UP EVERY MINUTE THEY'LL TEACH YOU SOMETHING WITHOUT YOU KNOWING IT!

COMPETENCY-BASED VOCATIONAL EDUCATION

HAVE YOU...

★ Provided your students with the objectives of their program so they know what they are to accomplish?

★ Individualized instruction to meet the needs of your students?

★ Pretested or preassessed students to identify what they already know?

★ Revised instruction to meet changing societal needs?

★ Made time requirements flexible for different students?

★ Specified the competencies needed to exit a program?

★ Stated learner objectives in behavioral terms?

★ Established criteria levels for learner performance?

★ Offered a variety of alternative learning activities?

★ Encouraged students to be responsible for their own learning?

CBE CHARACTERISTICS

There are four major characteristics of a competency-based program:

1. Course content is based on a valid job/task analysis or a content analysis.

2. Student performance objectives are specified in advance of instruction.

3. An instructional delivery system is used that allows for individualization, feedback, and flexibility.

4. A criterion-referenced evaluation system is used to measure a student's competency.

CHARACTERISTICS OF A CBVE PROGRAM

1. Course content is based upon actual worker's tasks which are measurable.
2. Student performance objectives are specified in advance of instruction.
3. Student achievement is based upon demonstrated competency.
4. Instruction is individualized.
5. The student and teacher are more accountable for performance of competencies.
6. Learning is guided by feedback.
7. Learning time is flexible.
8. An open entry/open exit program is possible.
9. Criterion-referenced measurement is employed to evaluate the attainment of the performance objectives.
10. The teacher is a manager and facilitator of instruction.

GENERAL COMMENTS ABOUT CBVE

1. Local commitment, coordination and leadership is necessary if CBVE is going to work. This commitment and leadership should come from the superintendent, vocational supervisor, school principal, and department heads.

2. CBVE is not a fad and not new to education. Many of the characteristics of CBVE have been around for many years.

3. CBVE is **not** the answer to all the "problems" of vocational instruction (i.e., motivating students, grading, individualizing instruction, discipline, lack of supplies and equipment, the quality of vocational students, reading problems, etc.)

4. It is hard to write good competency-based curriculum.

5. Existing curriculum materials need to be **modified** for CBVE implementation. Teachers must be shown how to use available curriculum materials and how to modify their present curriculum. Administrators, supervisors and teachers must be encouraged to utilize existing curriculum materials which are available from curriculum development centers throughout the United States.

6. All teachers do **not** have to be involved in the **writing** of curriculum. They should be asked for their input, review and ways to modify the curriculum. They should also be shown how to modify and implement instructional materials.

7. In general, it takes two to three years to implement a CBVE program, depending on what instructional delivery system is used.

8. Each county or school should develop a three-year plan to implement CBVE.

9. In general, curricula does not have to be specifically written for a specific locale. An auto mechanic is an auto mechanic, no matter where he/she works.

10. CBVE will not lower program standards, but will probably raise them. Minimum standards do not become maximum standards. If minimum standards are stated, these may be tied into grades (i.e., those who achieve the minimum standard receive a C grade).

11. Research has found that when compared to the "traditional" approach to instruction, CBVE:
    a. Enables students to achieve higher.
    b. Enables students to learn faster.
    c. Improves students attitudes towards learning.

12. Local plans should include what local activities are planned to incorporate CBVE.

13. Just because vocational education courses have individuals doing activities, working with their hands, and actively involved in learning, do not make them competency-based.

14. CBVE will not make great teachers out of all teachers. It will make most teachers better at **organizing instruction.**

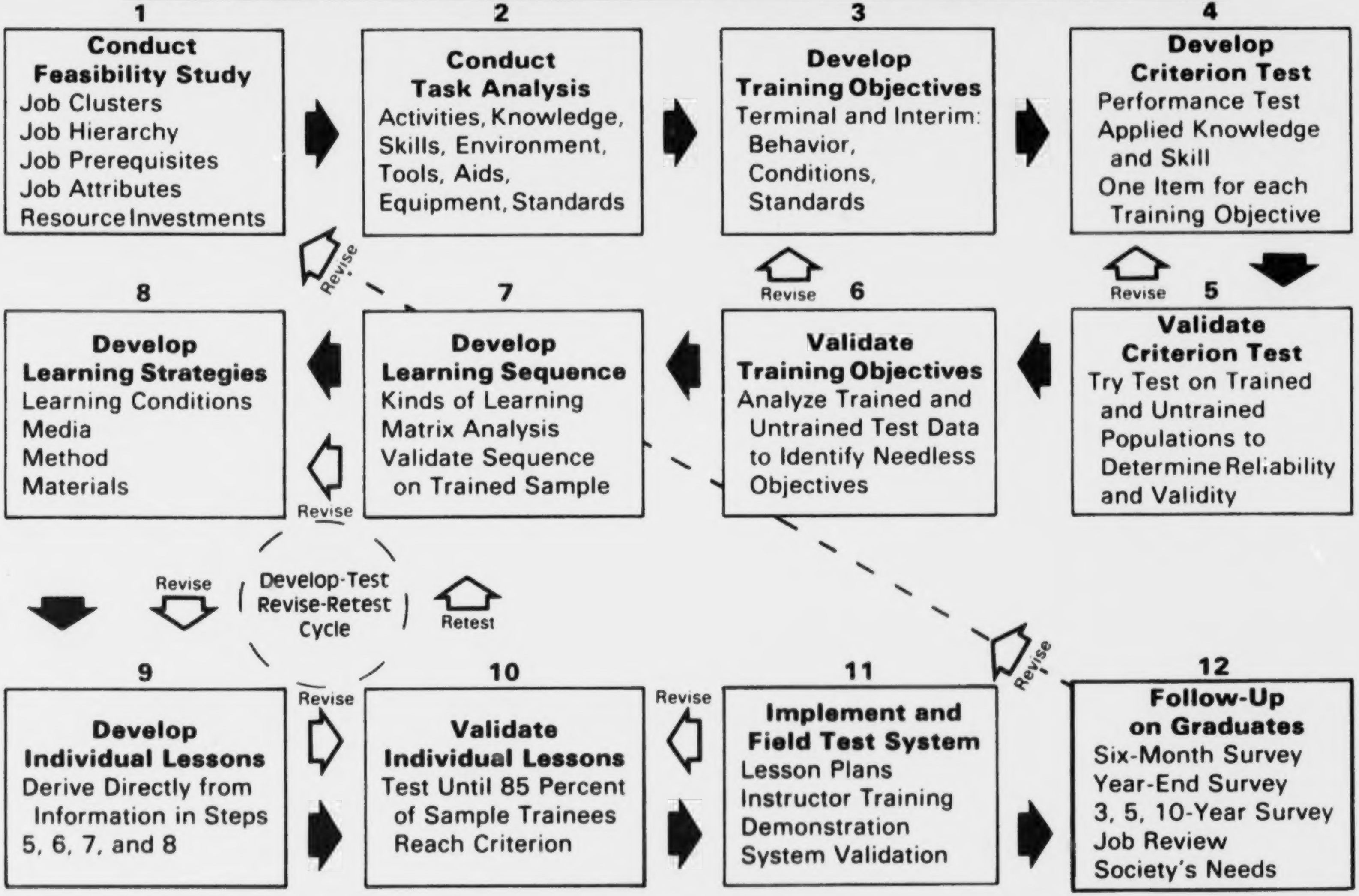
15. The teacher is the most important key to whether or not CBVE will work in the classroom.

INSTRUCTIONAL SYSTEMS APPROACH

The Instructional Systems Approach is a systematic way of developing instruction and curriculum. An Instructional Systems Approach is characterized as follows:

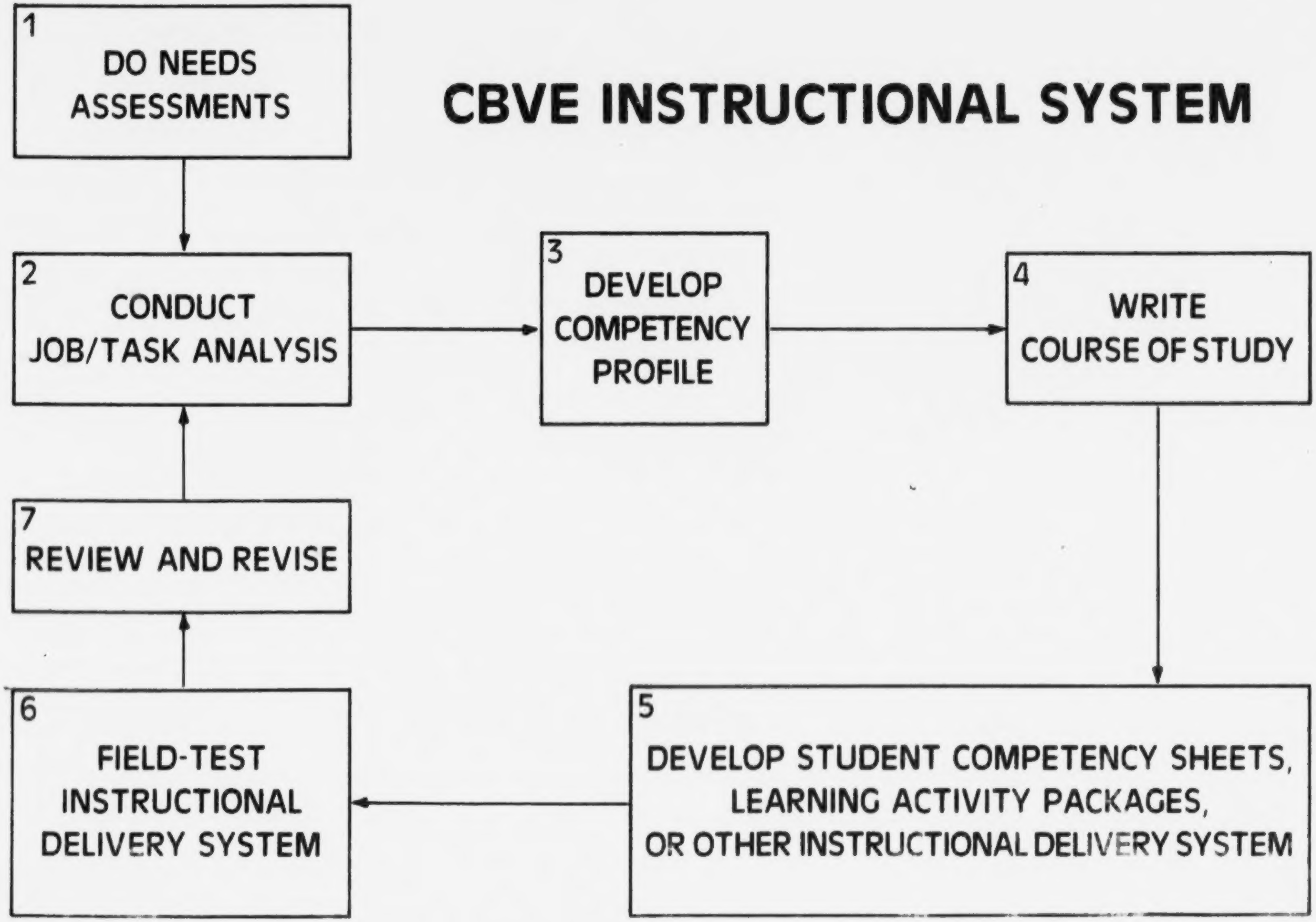
1. Modular in structure. Designed in learning units, sequenced in a series of instructional or performance objectives, building from the simple to the more complex.
2. Determination of need (job and task analysis).
3. Stated learner performance objectives, with criterion measures of these performances.
4. Identification of incoming student characteristics that might help in the design of content, media, level of activities, and instructional strategies.
5. Content and media is selected to achieve the performance objectives, with alternate media and strategies.
6. Learning experiences designed or programmed to achieve the performance objectives in the minimum amount of time and effort, at the designated level of proficiency.
7. The use of feedback to keep the student informed of his or her progress, and to improve or modify instructional procedures and curriculum content.

FLOW CHART OF TRAINING SYSTEM DEVELOPMENT PROCESS


1
Conduct Feasibility Study
Job Clusters
Job Hierarchy
Job Prerequisites
Job Attributes
Resource Investments
2
Conduct Task Analysis
Activities, Knowledge, Skills, Environment, Tools, Aids, Equipment, Standards
3
Develop Training Objectives
Terminal and Interim:
Behavior,
Conditions,
Standards
4
Develop Criterion Test
Performance Test
Applied Knowledge and Skill
One Item for each Training Objective
Revise
Revise
Revise
5
Validate Criterion Test
Try Test on Trained and Untrained Populations to Determine Reliability and Validity
6
Validate Training Objectives
Analyze Trained and Untrained Test Data to Identify Needless Objectives
7
Develop Learning Sequence
Kinds of Learning
Matrix Analysis
Validate Sequence on Trained Sample
8
Develop Learning Strategies
Learning Conditions
Media
Method
Materials
Revise
Revise
Develop-Test Revise-Retest Cycle
Retest
Revise
9
Develop Individual Lessons
Derive Directly from Information in Steps 5, 6, 7, and 8
Revise
10
Validate Individual Lessons
Test Until 85 Percent of Sample Trainees Reach Criterion
Revise
11
Implement and Field Test System
Lesson Plans
Instructor Training
Demonstration
System Validation
Revise
12
Follow-Up on Graduates
Six-Month Survey
Year-End Survey
3, 5, 10-Year Survey
Job Review
Society's Needs

SOURCE: F. Coit Butler, Instructional Systems Development for Vocational and Technical Training, Educational Technology Publications, Englewood Cliffs, New Jersey, p.53.

CBVE INSTRUCTIONAL SYSTEM



1 DO NEEDS ASSESSMENTS

2 CONDUCT JOB/TASK ANALYSIS

3 DEVELOP COMPETENCY PROFILE

4 WRITE COURSE OF STUDY

5 DEVELOP STUDENT COMPETENCY SHEETS, LEARNING ACTIVITY PACKAGES, OR OTHER INSTRUCTIONAL DELIVERY SYSTEM

6 FIELD-TEST INSTRUCTIONAL DELIVERY SYSTEM

7 REVIEW AND REVISE

HOW TO WRITE AND USE COMPETENCY PROFILES

PURPOSE

When you have completed this booklet, you will be able to: (1) develop a competency profile for your course or program; and (2) describe how to use a competency profile.

INTRODUCTION

One of the important aspects of competency-based vocational education (CBVE) is the specification of competencies that a student is to achieve. In order to communicate and keep track of a student's progress on these competencies, a form which is called a competency profile can be used. This form basically contains a list of the competencies for a specific program or course, along with other information that will give a good overall picture of the student to prospective employers, parents, and other teachers.

DIRECTIONS

Read the objectives below. If you feel you need further information about competency profiles, read the instructional material in this booklet. If you think you can achieve the objectives, complete Worksheets I and II.

OBJECTIVES

Upon completion of this booklet, you will be able to perform the following:

1. Given information on writing competency profiles and examples of different competency profiles in your field, develop a competency profile for use in your course or program. Your profile will be evaluated using a checklist. All items must receive an acceptable rating.

2. Given information on using competency profiles, write a plan for using competency profiles in your class. Your plan will be evaluated using a checklist. All items must receive an acceptable rating.

Perform the following activities. Check them off as you do them.

______ Read Information Section I on "Developing Competency Profiles."

______ In a small group, examine examples of competency profiles. Discuss the similarities and differences, and advantages and disadvantages of the profiles.

______ Test Your Knowledge by developing a competency profile for your program or course using Worksheet I.

______ Read Information Section II on "Using Competency Profiles."

______ In a small group, brainstorm how competency profiles can be used in the classroom.

______ Test Your Knowledge by developing a plan to use competency profiles in your classroom using Worksheet II.

Information Section I

DEVELOPING COMPETENCY PROFILES

A competency profile is a record-keeping form to keep track of a student's competencies in a specific occupational area. The profile usually contains a listing of units of instruction, competency statements under each unit, a rating scale, background information, and a section for evaluating work attitudes.

There are many names being used for a competency profile. Among these are: skill record, employability profile, proficiency evaluation form, training achievement record, and performance record. No matter what term is used, they all have basically the same information and serve the same purpose.

The following points should be kept in mind when developing a competency profile:

1. Before writing a competency profile, obtain existing profiles or listings of competencies. There are many in existence that have been developed by different schools, counties, and state departments of education.

2. It is important to make your profile correspond to the performance objectives for your course or program.

3. After examining existing profiles, determine your units of instruction and develop your competency statements. A competency statement contains an action verb and noun (i.e., type a business letter).

4. Decide on whether attitudes will be included on the profile. The attitudes can be integrated into the competency statements under the units of instruction or be listed as a separate section.

5. After determining the units, competencies, and attitudes, a format must be selected. Formats range from a wallet-size card to several sheets of paper. Profiles can be placed on file folders, diplomas, and certificates. Enclosed in this booklet are some examples of profiles for your consideration. (See Appendix A.)

For the first year of operating under CBVE, some schools develop their list as they go along, while others print their complete lists from the start. The latter way is the best way to go. Be sure to leave room on the profile to add competencies under each unit of instruction.

The Rating Scale

The rating scale is a very important element of a competency profile. The scale should not go beyond six rating levels. Preferably, the scale should have from three to five levels. Teachers find it difficult to use a large number of levels.

In the rating scale, try to avoid terms like "excellent," "good," and "fair." These terms are too ambiguous. What is "good" to one teacher may be "excellent" to another. Try to use terms that are related to job standards, entry-level performance, or the amount of supervision needed by the student. Some of these terms would read, "can perform competency at job-entry level," "can perform job with minimum supervision," and "can perform job under close supervision."

The rating scale could use symbols (⊡ ⧅ ⧅ ⊠ ⊠), letters (A, B, C, D), or numbers (1, 2, 3, 4) to indicate the levels of performance.

Numbering System for Units and Competencies

It helps if the units of instruction and competencies are numbered or coded in some way. There are many systems that can be used. Two examples are:

1. Letter the units and number the competencies:

        A. Unit of Instruction
            1. Competency
            2. Competency

2. Use whole numbers for the units and decimals for the competencies:

        1.00 Unit of Instruction
            1.01 Competency
            1.02 Competency

Additional Information on a Profile

Additional information besides the units of instruction and competencies is usually placed on a competency profile. This information could be:

1. Student's name
2. Teacher's name
3. Program or course title
4. Attendance record
5. School year
6. Graduation date of student

Plenty of room should also be left for teacher comments. Beside each competency, room could be left for the beginning and completion dates that the student started and completed the competency.

TEST YOUR KNOWLEDGE

Directions: Develop a partial competency profile for a course or program you are teaching.

1. Determine what information you will include on the profile.
2. Determine the rating scale.
3. Identify the units of instruction.
4. Develop competency statements for only one unit of instruction.

Use Worksheet I for your profile. Your profile will be evaluated according to the enclosed checklist. All items must receive an acceptable rating.

Worksheet I

COMPETENCY PROFILE

Background Information:

Rating Scale:

Units of Instruction and Competency Statements for One Unit:

CHECKLIST FOR DEVELOPING COMPETENCY PROFILES

	Level of Performance	
	Acceptable	Unacceptable
1. Background information is included.		
2. Rating scale contains 3-5 levels and contains good rating statements.		
3. Units of instruction are stated.		
4. Competencies are stated for one unit of instruction.		
5. Competency statements contain an action verb and noun.		
6. Competency statements are valid.		
7. Competency statements are at the correct specificity level.		
8. Units of instruction and competencies are numbered or coded.		

Information Section II

USING COMPETENCY PROFILES

There are many uses for competency profiles in vocational education. A competency profile:

1. Provides the school with a reporting system for vocational programs which supplements the present grading system.
2. Provides parents with a record so that they can trace their child's progress on individual tasks.
3. Provides the student and teacher with an individual profile of where the student stands in achieving the competencies of a course or program.
4. Assists school personnel and students in the job placement process.
5. Provides specific information for prospective employers in the hiring of vocational graduates.
6. Provides specific information for employers in the supervision of newly hired vocational students. This may help in determining future training needs of the individual.
7. Provides a vocational program description which can assist school personnel and students in course selection.
8. Provides schools with an instrument for accountability.
9. Provides schools with a public relations instrument for information relating to specific vocational programs.

The school should establish a process or procedure for using competency profiles. The following is an example of how one school uses profiles.

The guidance department will operate under the following guidelines:

1. Upon a student's entry into a vocational program, the instructor will be given a competency profile with the student's name and anticipated year of graduation.
2. At the end of each school year, the guidance department will file the competency profile in the student's cumulative record. Profiles on area vocational students will remain at the vocational center. When the student has completed the vocational program, a copy of the profile will go to the home school to become part of the student's permanent record.
3. When a student completes the vocational program, the competency profile will become part of his/her permanent record.

4. If a vocational student requests a copy of his/her competency profile to assist him/her in securing full-time, part-time, or summer employment, the guidance department will obtain the profile from the vocational teacher and provide necessary copies.

5. Upon request, and with the student's permission, the guidance department will provide prospective employers with copies of the student's profile.

6. If a vocational student is seeking admission to a postsecondary school, the guidance department will provide a copy of the profile as part of the educational placement process.

The teacher will operate under the following guidelines:

1. At the end of each marking quarter, the teacher will indicate the student's level of proficiency on each of the competencies. If the student has not been exposed to a particular competency, no mark will be recorded.

2. Throughout the school year, the instructor will keep on file the competency profile for students in his/her program.

3. At the end of each school year, the instructor will return all profiles to the guidance department. Profiles on students completing the program should be thoroughly reviewed and updated before they become part of the student's permanent record.

The above is only one system for using competency profiles. Each school will have to develop their own system.

The student should also have a personal copy of the profile to keep track of his/her performance. It has been found that using competency profiles in a CBVE program has really motivated students.

The instructor may want to post an enlarged copy of the profile on the bulletin board. In doing so, the enlarged profile could serve as an overview and progress chart for the course or program.

Worksheet II

TEST YOUR KNOWLEDGE

Directions: Write the procedure or plan you would follow for using competency profile in your class. Your plan will be evaluated using a checklist. All items must receive an acceptable rating.

CHECKLIST FOR USING COMPETENCY PROFILES

The plan specifies:	Acceptable	Unacceptable
1. When the student will receive the profile.		
2. When the student will be rated on each competency.		
3. The flow of the profile from teacher to student to parents to school files to employer.		
4. Rules and regulations governing when and to whom the profile will go to.		

APPENDIX A

EXAMPLES OF COMPETENCY PROFILES

TRAINING ACHIEVEMENT RECORD

GENERAL EMPLOYABILITY TRAITS (proficiency code key)

FACTORS	SCALE VALUE	DEFINITION
PERFORMANCE LEVEL	1	**EXTREMELY LIMITED:** Can do simple parts of task—Needs to be told/shown how to do most of task - Needs extremely close supervision
	2	**PARTIALLY PROFICIENT:** Can do most parts of task—Needs help only on hardest parts—May not meet local demands for speed and accuracy—Needs close supervision
	3	**COMPETENT:** Can do all parts of task—Needs only spot check of completed work—Meets minimum local demands for speed and accuracy—Needs job entry supervision
	4	**HIGHLY PROFICIENT:** Can complete task quickly and accurately—Can direct others in how to do the task—Needs normal supervision
KNOWLEDGE LEVEL	a	**NOMENCLATURE:** Can identify parts, tools, and understand simple facts about task—Can identify related basic facts and terms
	b	**PROCEDURES:** Can name most steps in doing task—Needs help interpreting written instructions—Can explain basic facts and state general principles
	c	**TECHNIQUES AND PRINCIPLES:** Can explain how and when task must be done, why each step is needed—Can interpret written and oral instructions—Can analyze facts/principles
	d	**OPERATING PROFICIENCY:** Identify, measure, and use trouble shooting techniques resolving task related problems—Can evaluate conditions and make proper decisions
PERSONAL BEHAVIOR	I	**UNRELIABLE,** inappropriate personal appearance, disrupting, uncooperative, disinterested, disrespectful
	II	**OCCASIONALLY** reliable, cooperative, responsible, interested, respectful, and satisfactory personal appearance
	III	**USUALLY** reliable, cooperative, responsible, interested, respectful and appropriate personal appearance
	IV	**CONSISTENTLY** reliable, cooperative, responsible, interested, respectful and appropriate personal appearance
	V	**EXCEPTIONALLY** reliable, cooperative, responsible, interested, respectful and appropriate personal appearance, demonstrates self-assurance

EXPLANATION

Occupational skills can be used alone or together in any combination to define a level of training achievement for a specific job skill. Example: 1b and/or b. General Employability Traits are to be used when rating attitude and professional behavior.

IMPORTANT: Recommended changes in format, line items, and employability traits should be forwarded to: Chief, Vocational Training, Office of Program Development, Job Corps, MA/DOL, Washington, D. C. 20213

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Name________________________ SSN________________ Date Trainee Entered Training____________

Title CARPENTER, CONSTRUCTION DOT Code 860.381 Certified by________________ Form No. 440.84 A

Achieved Individual Marketable Skill		PERFORMANCE				KNOWLEDGE			
Safety		1	2	3	4	a	b	c	d
1. Practice safety on the job	4d								
2. Know & use safe practice handling tools, woodworking machinery	4d								
General									
3. Know & understand carpenter terminology	4d								
4. Use & maintain common hand tools	3c								
5. Use & maintain measuring tools & equipment	3c								
6. Use & maintain power operated woodworking machines	3c								
7. Read, understand & interpret building sketches	2b								
Foundations, Walls, Floors & Stairs									
8. Lay out building lines & set stakes for grading	3c								
9. Build & place straight concrete forms	3c								
10. Line up & brace concrete walls & columns	3c								
11. Lay out footings, build or place forms & brace	3c								
12. Build irregular concrete forms	3c								
13. Lay out & cut stairs & treads; install railings	2b								
Framing (Foundations & Walls)									
14. Lay out & frame sills & girders	3c								
15. Frame & set floor joists	3c								
16. Lay out walls & partitions	3c								
17. Erect walls & partitions	3c								
18. Install sheathing & plaster grounds	3c								
Roofs									
19. Frame & set common rafters	3c								
20. Frame & set valley rafters	3c								
21. Frame & set hip rafters	3c								
22. Frame & set jack rafters	3c								
23. Apply sheathing, composition shingles & other types of roof coverings	3c								
Exterior Millwork									
24. Determine correct tools & materials, supplies for task	2b								
25. Operate skill saw, electric drill & sander	3c								
26. Set up & operate bench saw	3c								
Interior Wall Coverings									
27. Apply wood coverings	3c								
28. Apply composition, sheet rock or fiber board	3c								
29. Install baseboards	3c								
Floors									
30. Lay sub-flooring	3c								
31. Lay hardwood flooring	3c								
32. Build & place forms for concrete floors	3c								

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Interior Finish									
33. Cut & fit base and mouldings	3c								
34. Set door jambs; fit & hang doors	3c								
35. Fit & hand windows	3c								
36. Fit & fasten hardware	3c								
Remodeling									
37. Install aluminum & vinyl siding	3c								
38. Install combination sorm windows & doors	3c								
39. Lay new roofing materials	3c								
40. Install aluminum porch enclosures, awnings, patio covers	3c								
41. Install metal porch rails & stair rails	3c								
42. Install overhead garage coors & radio-controlled garage door opener	3c								
43. Install plastic, asbestos & vinyl floor coverings	3c								
Additional Related Training Elements									

EDUCATION, TECHNICAL KNOWLEDGE--JOB PHYSICAL PROFILE		PERFORMANCE				KNOWLEDGE			
		1	2	3	4	a	b	c	d
1. Use instructions furnished in written, oral, diagram or schedule form	4d								
2. Use arithmetic; apply practical algebra and geometry	4d								
3. Read and interpret technical materials	4d								
4. Prepare reports and summaries, conforming to good English usage	4d								
1. Able to lift 50 lbs.maximum;carry to 25 lbs;walk & stand continuously	4								
2. Able to climb & use back muscles & legs to stoop,kneel,crouch,crawl	4								
3. Able to use fingers, hands, arms to reach, handle, feel	4								
4. Able to see efficiently	4								
5. Work both indoors & outdoors where physical hazards exist	4								

ATTITUDES AND PROFESSIONAL ETHICS		ATTITUDES & ETHICS				
		I	II	III	IV	V
1. Demonstrate correct safety practices on the job	V					
2. Maintain appropriate personal hygiene and appearance	III					
3. Arrive on the job on time	IV					
4. Is on the job every day	IV					
5. Perform work of consistently good quality	IV					
6. Function cooperatively with fellow workers	III					
7. Treat others courteously	III					
8. Work with even temperament	III					
9. Accept constructive criticism	IV					
10. Follow instructions willingly	IV					
11. Deal well with supervision	IV					
12. Willingly work unusual schedules when required	III					
13. Handle proprietary information discreetly; respect confidences	III					
14. Respect worth of equipment, company and personal property	IV					

INDIVIDUAL TRAINING COUNSELING (record)

Comments: Date: Trainee Signature Instructor Signature	Comments: Date: Trainee Signature Instructor Signature
Comments: Date: Trainee Signature Instructor Signature	Comments: Date: Trainee Signature Instructor Signature
Comments: Date: Trainee Signature Instructor Signature	Comments: Date: Trainee Signature Instructor Signature
Comments: Date: Trainee Signature Instructor Signature	Comments: Date: Trainee Signature Instructor Signature

PERFORMANCE SKILLS PROFILE

STUDENT'S NAME ______________________________ PROGRAM: VOCATIONAL DRAFTING
YEAR OF GRADUATION __________ DATE TRANSMITTED __________

LEVEL OF PROFICIENCY:

⊡ Student acquainted with job--limited skill
⧄ Student can perform job under close supervision
⧅ Student can perform job with minimum supervision
☒ Student has job-entry performance skills

Iden. of Drawing Equipment

SELECTED INDIVIDUAL TASKS:

1. Drawing boards ☐
2. T-Squares ☐
3. Drawing paper ☐
4. Pencils
   types & choice of ☐
   sharpening ☐
5. Triangles ☐
6. Erasers & erasing ☐
7. Scales ☐
8. Drawing instruments ☐

Use of Equip. & Instruments

1. Scales
   Architects ☐
   Engineers ☐
2. Pencils ☐
3. Triangles
   45° ☐
   $30^{\circ} - 60^{\circ}$ ☐
4. Compass
   Use & sharpening ☐
5. Alphabet of lines ☐
6. Quality of lines ☐
7. Secure paper to board ☐

Lettering

1. Origin of letters ☐
2. Single stroke gothic ☐
3. Uniformity in lettering ☐
4. Pencil technique ☐
5. Guide lines ☐
6. Lefthanders ☐
7. Spacing of letters & wds ☐
8. Numerals ☐

Geometric Shapes

1. Parts of a circle ☐
2. Triangles ☐
3. Quadrilaterals ☐
4. Regular polygons ☐
5. Five regular solids
   tetrahedron ☐
   hexahedron ☐
   octahedron ☐
   dodecahedron ☐
   icosahedron ☐

Geometric Construction

1. Bisect horizontal & vertical lines ☐
2. Bisect a line or arc ☐
3. Bisect an angle ☐
4. Draw a circle tangent to a line ☐
5. Draw a tangent to a circle ☐
6. Draw an arc tangent to two straight lines ☐
7. Draw an arc tangent to straight lines & arcs ☐

Third Angle Orthographic Proj.

1. Pictures & views ☐
2. Revolving the object theory ☐
3. Glass box theory ☐
4. Hidden lines ☐
5. Choice of views
   two-view drawings ☐
   three-view drawings ☐
6. Attitude of views ☐
7. Preference of lines ☐
8. Visualizing views ☐

Techniques & Applications

1. Pencil drawings ☐
2. Pencil technique ☐
3. Reproduction process ☐
4. Spacing of views ☐
5. Points & lines in views ☐
6. Planes & angles in views ☐
7. Curved surfaces in views ☐
8. Intersections and tangencies ☐

Dimensioning

1. Complete description of objects ☐
2. Arrowheads ☐
3. Figures & inch marks ☐
4. Direction of figures ☐
5. Finish marks ☐
6. Angles & arcs ☐
7. Placement ☐
8. Steps in applying ☐
9. Size of cylinders ☐
10. Location ☐
11. Superfluous dimensions ☐

Shop Processes.

1. Types of shops ☐
2. Castings
   fillets & rounds ☐
   runout ☐
   conventional edges ☐
3. Welding & weldments ☐
4. Measurements (in shop) ☐
5. The lathe & turnings ☐
6. Finished holes ☐
7. Machine tools
   lathe ☐
   grinder - shaper ☐
   miller ☐

Sectional Views

1. Full sections ☐
2. Section lining ☐
3. Visible, hidden & centerlines in section ☐
4. Half section ☐
5. Broken-out sections ☐
6. Revolved sections ☐
7. Removed sections ☐
8. Offset sections ☐
9. Ribs & spokes in section ☐
10. Conventional breaks ☐

Threads & Fasteners

1. Screw threads ☐
2. Cutting thds on lathe ☐
3. Thread forms ☐
4. Thread pitch ☐
5. Rt. & lft. hand thrds ☐
6. Multiple threads ☐
7. Symbolic & detailed thd ☐
8. Am. Nat'l screw thds ☐
9. Unified threads ☐
10. Thread notes ☐
11. USA Std. nuts & bolts ☐
12. Spec. for nuts & bolts ☐
13. USA Std. cap screws ☐
14. USA Std. machine screws ☐
15. USA Std. set screws ☐
16. Keys & keyways ☐
17. Locking devices ☐

Pictorial Drawings

1. Types
   - perspective ☐
   - isometric ☐
   - oblique ☐
2. Isometric drawings
   - sketching ☐
   - angles ☐
   - circles, arcs, ☐
   - ellipses ☐
3. Oblique drawings
   - angle & scale of depth axis ☐
   - choice of position ☐
4. Perspective
   - two-point ☐
   - one-point ☐

Working Drawings

1. Industrial drafting ☐
2. Checking drawings ☐
3. Standards
   - A.S.A. ☐
   - I.S.O. ☐
   - drawing ☐
4. Assembly drawings
   - outline assembly ☐
   - working drawing assembly ☐
5. Assemblies in section ☐
6. Welding drawings ☐

Auxiliary Views

1. Inclined surfaces ☐
2. Auxiliary view ☐
3. Three auxiliary views ☐
4. Reference planes ☐
5. Plotted curves ☐
6. Angles ☐
7. Auxiliary sections ☐
8. True length of line ☐

Gears & Cams

1. Types of cams ☐
2. Cam followers ☐
3. Cam motion ☐
4. Cam profiles ☐
5. Types of gears ☐
6. Shape of teeth ☐

Cooperative Work Experience

1. Architectural Drafting ☐
2. ____________________ ☐
3. ____________________ ☐
4. ____________________ ☐
5. ____________________ ☐

WORK HABITS

ATTENDANCE & PUNCTUALITY Consider frequency of absences as well as latenesses	Record is Excellent ☐	Occasionally Absent/Late ☐	Frequently Absent/Late ☐	Undependable Absent/Late Without Notice ☐
ATTITUDE Consider his attitude toward his work, company & associates, and his willingness to work with and for others	Unusually Fine Attitude ☐	Good Attitude ☐	Passable ☐	Poor Attitude ☐
JUDGMENT & INITIATIVE Consider his ability to make decisions and to utilize working time to best advantage	Justifies Utmost Confidence ☐	Applies Himself well ☐	Needs Frequent Checking ☐	Cannot be relied upon, Needs constant supervision ☐
RELIABILITY Consider the ability of the person to get the work out under pressure, and to follow job through to completion	Can always be counted upon ☐	Generally can be counted on ☐	Unpredictable ☐	Seldom reliable under pressure ☐
FLEXIBILITY & ADAPTABILITY Consider the speed with which he learns and the amount of instruction required to teach him new duties	Learns Fast ☐	Learns Reasonably Fast ☐	Slow to Learn ☐	Unable to Learn ☐
SAFETY CONSCIOUSNESS Consider appearance, "Housekeeping," conform to work standards	Decidedly Favorable ☐	Good ☐	Passable ☐	Generally Unsatisfactory ☐

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Suburban Hennepin County Area Vocational-Technical Centers

JOINT INDEPENDENT SCHOOL DISTRICT #287

This certifies

____

has the competencies evaluated on the
reverse side for the program

____

and is therefore entitled to receive this

Recognition

given this ______ day of ____________________, 19 ___

____
Chairman of the Board

____
Superintendent

RATING SCALE

6–	Performs task/competency with exceptional ability.	2–	Performs task/competency with constant assistance.
5–	Performs task/competency with speed and quality.	1–	Cannot perform this task/competency satisfactorily.
4–	Performs task/competency at job entry.	T–	Task/competency accomplished at or above job entry level by performance-challenge test.
3–	Performs task/competency with periodic assistance.		

For additional information concerning the student's training, please request a transcript from

Office of Admissions & Records
Suburban Hennepin County Area
Vocational Technical School
1820 North Xenium Lane
Minneapolis, Minnesota 55441

INSTRUCTOR	INITIALS
1. ______________________	__________
2. ______________________	__________
3. ______________________	__________
4. ______________________	__________
5. ______________________	__________
6. ______________________	__________

COMPETENCIES

KITCHEN ASSISTANT

Effective December 1977

Comp No.	Competencies - Task	Ratings						[illegible]	[illegible]	[illegible]
		1	2	3	4	5	6			
01	UTILITY PERSON (KITCHEN)									
01.01	Wash Dishes Using Various Types of Dish Washing Machines									
	01 Identify dishwashing operating and clean dish handling procedures									
	02 Set up and clean dish machines									
	03 Wash and stack silverware									
	04 Operate a disposal									
	05 Identify and use proper soaps and sterilizers									
	06 Clean tables and chairs									
	07 Operate utensil pot washer									
	08 Identify and practice kitchen safety procedures									
01.02	Wash pots and pans									
	01 Fill the three compartment sinks									
	02 Identify and practice kitchen safety procedures									
01.03	Clean and Care for Kitchen Equipment									
	01 Identify kitchen equipment and its use									
	02 Clean and assemble kitchen equipment									
	03 Identify and practice safety in handling kitchen equipment									
01.04	Identify Kitchen Terms & Procedures									
	01 Identify food service personnel and their jobs									
	02 Identify terms used in food service									

*Hour Average: The hours it takes the average student to complete this competency

12/77

Comp No.	Competencies - Task	Ratings						[illegible]	[illegible]	[illegible]
		1	2	3	4	5	6			
01.05	Maintain Personal Appearance and Attitudes									
	01 Identify negative personal appearance traits									
	02 Identify good standards for workers									
	03 Identify negative job interview characteristics									
	04 Identify good standards for a job interview									
02	UTILITY PERSON (LAUNDRY)									
02.01	Launder Restaurant Linen and Clothing									
	01 Handle restaurant linen and clothing									
	02 Sort laundry and remove stains									
	03 Launder restaurant linen and clothing									
	04 Dry laundry									
	05 Fold laundry									
	06 Clean laundry room									
03	UTILITY PERSON (SAFETY)									
03.01	Practice Safety Procedures and Preventive Maintenance									
	01 Care for burns									
	02 Care for electric shock									
	03 Operate equipment to maintain safety									
	04 Care for chemical injuries									
	05 Take necessary procedures to prevent slipping and falling									
	06 Prevent fires									
	07 Identify and practice correct procedures for contacting maintenance personnel for needed assistance									

*Hour Average: The hours it takes the average student to complete this competency

12/77

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KEMP HORN VOCATIONAL CENTER

Name ______________________ Instructor ______________________

School Year _____ to _____ Semester: ☐ Fall ☐ Spring Principal ______________________

Key: N - Not Ready S - With Supervision I - Independently

	1st Marking Period			2nd Marking Period		
GROUNDSKEEPING	N	S	I	N	S	I
Chooses the appropriate tool for the job						
Returns tools to proper place						
Operates groundskeeping equipment: 1. Lawn mower						
2. Tractor						
3. Rototiller						
4. Attaches cart						
5. Lawn sweeper						
6. Electric clippers						
Observes safety regulations when operating equipment						
Performs groundskeeping tasks: 1. Cuts grass evenly						
2. Trims grass						
3. Transplants shrubbery						
4. Transplants flowers						
5. Removes weeds						
6. Adds mulch						
7. Plants seeds in flats						
8. Plants bulbs						
9. Rakes grass and leaves						
10. Polices the area						
11. Prunes shrubbery						
12. Prepares soil for seeding						
13. Checks oil and gas						
14. Greases equipment						
15. Applies fertilizer						
16. Uses hoe						
17. Chooses correct size pot for plant						
18. Makes cuttings						
19. Evaluates area to be worked on						
Recognizes words used in groundskeeping						

1st Marking Period	2nd Marking Period
Instructor Observations: Date ________	Instructor Observations: Date ________
Parent Signature ________________ Comments:	Parent Signature ________________ Comments:

KEMP HORN VOCATIONAL CENTER

Name ______________________________ Instructor ______________________________

School Year ______ to ______ Semester: ☐ Fall ☐ Spring Principal ______________________________

Attendance: 1st Marking Period ________ ________
2nd Marking Period ________ ________
Present Absent

	1st Marking Period			2nd Marking Period		
PERSONAL WORK CHARACTERISTICS	Needs Improvement	Acceptable	Good	Needs Improvement	Acceptable	Good
Work Habits						
1. Comes to work/school daily						
2. Punches time card on time and correctly						
3. Follows directions:						
a. Verbal						
b. Written						
4. Works to capacity						
5. Looks for work without being told						
Work Skills						
1. Demonstrates quality of work						
2. Evaluates own work						
3. Completes full work day						
4. Demonstrates manual dexterity						
5. Completes appropriate quantity of work						
6. Works independently						
7. Demonstrates eye-hand coordination						
Work Attitudes						
1. Demonstrates initiative						
2. Enjoys work						
3. Shows interest in work						
Socialization Skills						
1. Works well with others						
2. Is friendly						
3. Is mannerly						
4. Accepts constructive criticism						
Personal Skills						
1. Dresses appropriately for job/school						
2. Uses good grooming habits						

1st Marking Period	2nd Marking Period
Instructor Observations: Date ____________	Instructor Observations: Date ____________
Parent Signature ______________________ Comments:	Parent Signature ______________________ Comments:

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EMPLOYABILITY PROFILE

OSWEGO COUNTY BOARD OF COOPERATIVE EDUCATIONAL SERVICES
MEXICO, NEW YORK 13114
PHONE: 315-963-7251
1976 - 1977

Name ____________________ Home School ____________________ Grade ________

Course PLUMBING ____________________ Date ____________ Quarter 1st__ 2nd__ 3rd__ Final__

The following is a list of entery level operations and skills that the above student has been exposed to. These operations have been accompanied by a significant amount of classroom work in related theory.

TRODUCTION
- ☐ BOCES orientation
- ☐ Area Safety
- ☐ Proper use of shop — school neatness
- ☐ Plumbing shop safety
- ☐ Working clothes — safety glasses, shoes, ruler, pencils

LUEPRINTS
- ☐ Reading scale
- ☐ Checking symbols
- ☐ Making lay outs

PIPING — Plumbing
- ☐ Type materials
- Applications (use)
  - ☐ water
  - ☐ drainage
  - ☐ sewer
  - ☐ oil
  - ☐ gas
  - ☐ air

PIPE WORK — STEEL
- ☐ Measuring — ruler
- ☐ Cutting — pipe cutter
- ☐ Reaming & pipe reamer
- ☐ Threading — hand — power drive
- ☐ Power threading machine—dies
- ☐ ⅛" thru 4"
- ☐ Use of utility oiler
- ☐ Use of pipe wrenches

PIPE WORK — COPPER
- ☐ Measuring—ruler
- ☐ Cutting—tube cutter
- ☐ Reamer—tube reamer
- ☐ Sweating—prestolite L.P. gases
- ☐ Tube bending—bender
- ☐ Copper cleaning machine
- ☐ Flaring tool
- ☐ Sweating joints

ALLIED TOOLS
- ☐ Use power drill
- ☐ Use power sawzall
- ☐ Use bench vise
- ☐ Use tripod vise
- ☐ Use chain vise

- ☐ Use hand tools
  - ☐ level
  - ☐ square
  - ☐ hammers—pliers—screwdriver
  - ☐ bit brace and bit
  - ☐ hand drill
  - ☐ drill press
  - ☐ plumb bob
  - ☐ hand saws
  - ☐ jab saw and etc

SOIL PIPE — CAST IRON
- ☐ Measuring
- ☐ Cutting
- ☐ Yarning with oakum
- ☐ Pouring lead joint (hot)
  - ☐ vertical
  - ☐ hortizonal
- ☐ Mechanical joint assy

SOIL PIPE — COPPER DWV
- ☐ Measuring
- ☐ Cutting
- ☐ Sweat joints—tube

SOIL PIPE — ABS — PLASTIC
- ☐ Measuring
- ☐ Cutting
- ☐ Assembly

CODES PRETAINING TO PLUMBING
- ☐ Why used
- ☐ Where used

ROUGH—IN—WORK
- ☐ Sewer lines—copper, plastic—cast iron
- ☐ Drain lines—copper, plastic—cast iron
- ☐ Vent lines—copper, plastic—cast iron
- ☐ Water lines —hot—cold

INSTALLING FULL BATH
- ☐ Tub—setting
- ☐ Tub faucets—shower
- ☐ Tub waste and overflow—traps

LAVATORY
- ☐ Setting bowl—cast iron—china
- ☐ Faucets—single—combination
- ☐ Pop—up—waste—traps

TOILET COMBINATION
- ☐ Setting bowl—gaskets—bolts
- ☐ Assemble tank unit
- ☐ Connecting water supply
- ☐ Install seat

KITCHEN SINK
- ☐ Cabinet type
- ☐ Drop—in type—rims
- ☐ Single—double bowl—rimless
- ☐ Faucets—spray
- ☐ Waste—trap—connections

WATER HEATERS
- ☐ Electric
- ☐ Gas—Natural —L.P.—Gas
- ☐ Tank type
- ☐ Tankless type
- ☐ Installing—relief valve
- ☐ Unions—proper piping

SEPTIC TANKS — DRAIN FIELDS
- ☐ Sizing
- ☐ Locations
- ☐ Material required
- ☐ Venting

SEWER CLEANING EQUIPMENT
- ☐ Purpose
- ☐ Useage
- ☐ Safety
- ☐ Results

JOB ESTIMATING
- ☐ Labor cost
- ☐ Material cost
- ☐ Overhead—trucks—equipment

REVIEW
- ☐ Tools—equipment
- ☐ Pipe work
- ☐ Codes
- ☐ Blueprints
- ☐ Rough—in work
- ☐ Bath—Sink—Installation
- ☐ Waterheaters
- ☐ Septic tanks
- ☐ Job estimating

WORK HABITS	IGNORES DIRECTIONS ☐	FOLLOWS SOME DIRECTIONS, WORKS INEFFICIENTLY ☐	FOLLOWS DIRECTIONS AND WORKS SATISFACTORILY ☐	STEADY CONSCIENTIOUS WORKER ☐	VERY ACCURATE RESOURCEFUL AND EFFICIENT ☐
SAFETY HABITS	SLOPPY AND HAZARDOUS ☐	FAIR, NEEDS IMPROVEMENT ☐	GENERALLY WORKS SAFELY ☐	MEETS REQUIRED SAFETY STANDARDS ☐	NEAT CONSCIENTIOUS AND CAREFUL ☐
WORK AREA NEATNESS	VERY SLOPPY AND INCONSIDERATE ☐	FORGETFUL AND UNCONSCIENTIOUS ☐	ADEQUATE ☐	THOROUGH ☐	PRIDE IN OVERALL APPEARANCE OF FACILITIES ☐
WORK AREA ATTENDANCE	OFTEN NOT IN WORK AREA ☐	MAKES EXCUSES TO LEAVE WORK AREA ☐	GENERALLY IN WORK AREA ☐	SELDOM LEAVES WORK AREA ☐	ALWAYS WHERE ASSIGNED ☐
SELF-ESTEEM	NO SELF-CONFIDENCE ☐	INSECURE SELF-CONSCIOUS DEFENSIVE ☐	BALANCED ATTITUDE ☐	POSITIVE SELF EVALUATION ☐	SELF-CONFIDENT AND SECURE ☐
RESPONSIBILITY	UNRELIABLE ☐	SOMETIMES RELIABLE ☐	USUALLY RELIABLE ☐	CONSCIENTIOUS ☐	ASSUMES RESPONSIBILITY VERY WELL ☐

MOTIVATION	APATHETIC ☐	SPORADICALLY MOTIVATED ☐	GENERALLY MOTIVATED ☐	INTERESTED IN EXCELLING ☐	HIGHLY INVOLVED AND MOTIVATED ☐
INITIATIVE	REQUIRES CONSTANT PRESSURE ☐	NEEDS OCCASIONAL PRODDING ☐	DOES ASSIGNED WORK ☐	OCCASIONALLY SEEKS EXTRA WORK ☐	SEEKS AND RECOGNIZES WORK TO BE DONE ☐
EFFORT	QUITTER ☐	APPLIES MINIMAL EFFORT ☐	SHOWS SATISFACTORY EFFORT ☐	SHOWS GROWING DETERMINATION ☐	DETERMINED, PERSEVERING AND DILIGENT ☐
PEER RELATIONS	UNCOOPERATIVE ☐	SOMETIMES HARD TO WORK WITH ☐	GENERALLY COOPERATIVE ☐	WORKS VERY WELL WITH OTHERS ☐	OUTGOING, WARM AND COOPERATIVE ☐
LEADERSHIP	UNABLE TO LEAD ☐	TENDS TO FOLLOW ☐	SHOWS LEADERSHIP WHEN REQUESTED ☐	VOLUNTARILY DISPLAYS LEADERSHIP ☐	"MAKES THINGS GO" ☐
REACTION TO AUTHORITY	HOSTILE ☐	INDIFFERENT ☐	ACCEPTING ☐	GENERALLY COOPERATIVE ☐	EXCEPTIONALLY COOPERATIVE ☐

INSTRUCTOR'S COMMENTS ____________________

____

____

____

____

____

Total Days Absent ____________

____
INSTRUCTOR'S SIGNITURE

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BALTIMORE
CITY
PUBLIC
SCHOOL No·9

CERTIFICATE OF PROFICIENCY

THIS IS TO CERTIFY THAT

HAS ACHIEVED SKILLS IN

THE BUSINESS TRAINING PROGRAM

INDICATED ON THE TASK CHECKLIST BELOW
AND IS RECOMMENDED FOR ENTRY INTO
THE TRADE AT HIS/HER PROFICIENCY LEVEL.

DATE OF ISSUE	PRINCIPAL	INSTRUCTOR

TO THE EMPLOYER: This certificate indicates the level of proficiency achieved by this graduate.
Key: L=Limited—Needs additional instruction or close supervision. M=Moderate—Can perform the task with moderate amount of supervision. S=Skilled—Can perform the task independently with accuracy.
If the task has not been taught, it will be lined out.

	L	M	S
TYPEWRITING			
Use and care for typewriter			
Type 30-35 words per minute with 5 errors or less			
Address envelopes			
Type carbon copies			
Correct errors			
Erase			
Produce mailable letters			
Type from rough draft			
GENERAL OFFICE WORK			
Handle a mail list			
Fold and insert letters into envelopes			
Complete business reports and forms			
Answer telephone			
File with accuracy			
DUPLICATION			
Use and care for machines			
Practice safety in machine operation			
Cut and run stencils			
Make master copies			
BUSINESS MATH			
General and usable knowledge of addition, subtraction, multiplication and division			
Write and deposit checks			
Make withdrawals			
Bank statements			

HOW TO WRITE AND USE STUDENT COMPETENCY SHEETS

PURPOSE

After completing this booklet, you will be able to: (1) write a student competency sheet for your subject area, and (2) use student competency sheets to improve the teaching-learning process in your classroom.

INTRODUCTION

A competency-based vocational education (CBVE) instructional program is organized so that the learning activities lead to the mastery of a particular set of competencies. A student competency sheet is one way of implementing CBVE into the classroom. A student competency sheet is an instructional sheet that can be used in a competency-based instructional program to identify for the student the unit of instruction, the competency or task to be learned, the performance objective to be achieved, the various learning activities to be performed, the evaluation activity that the student must complete, and extended activities that the student can do to improve his/her level of competency.

DIRECTIONS

Read the objectives below. If you feel you need further information on how to write and use student competency sheets, read the instructional material in this booklet. If you think you can achieve the objectives, complete Worksheets I and IV contained in this booklet.

OBJECTIVES

Upon completion of this booklet, you will be able to perform the following:

1. Given information on how to write student competency sheets, you will write a student competency sheet in your area. A checklist will be used to rate your performance. All items must receive an acceptable rating.

2. Given information on how to use student competency sheets, you will describe in writing a method of using student competency sheets with your students. A checklist will be used to rate your performance. All items must receive an acceptable rating.

COMPETENCY SHEET I

UNIT: Developing competency-based instructional materials.

COMPETENCY: Writing student competency sheets.

PERFORMANCE OBJECTIVE: Given information on how to write student competency sheets, write one student competency sheet in your area. A checklist will be used to rate your performance. All items must receive an acceptable rating.

LEARNING ACTIVITIES:

________ 1. Read this entire competency sheet. If you think you can perform the objective, complete the evaluation section. If not, do as many other activities as needed.

________ 2. Attend lecture/discussion on writing student competency sheets.

________ 3. Read Information Sheet I on "Writing Student Competency Sheets."

________ 4. Read Information Sheet II on "Instructional Strategies."

________ 5. Using Worksheet I, develop a student competency sheet that could be used in your classroom. For your unit, competency, and performance objective, you may write your own, use a V-TECS catalog, or use any other reference.

________ 6. Within your workshop group, choose a partner and exchange the student competency sheet you have written. Evaluate your partner's competency sheet by using the Competency Checklist found on page 9.

________ 7. Return the student competency sheet with the Competency Checklist to your partner. If you received an unacceptable rating in any area, revise the sheet and return it to your partner for a re-check.

EVALUATION: Locate a new partner and write another student competency sheet. Exchange the student competency sheet and evaluate the sheet by using the Competency Checklist. All items in the checklist must receive an acceptable rating.

EXTENDED ACTIVITIES:

________ 1. Prepare another student competency sheet and evaluate it using the Competency Checklist.

________ 2. Discuss with your workshop leader and/or within a small group different learning activities that can be used on student competency sheets.

________ 3. Make copies of other student competency sheets developed by group members.

________ 4. Develop student competency sheets for a complete unit of instruction in your subject area.

Information Sheet I

WRITING STUDENT COMPETENCY SHEETS

What is a Student Competency Sheet?

A student competency sheet is an instructional management tool to help organize the teaching-learning process. The sheet is used by the student and lists the unit, competency or task, performance objective, learning activities, evaluation exercise the student must complete to master one competency, and extended activities that the student can do to further his/her skills. After obtaining the student competency sheet, the student works at his or her own rate to complete the learning activities needed to achieve the performance level which is stated in the performance objective. Upon successful completion, the student proceeds to the next student competency sheet in a similar manner until he or she has mastered all competencies in a unit of instruction.

Components of a Student Competency Sheet

A competency sheet contains six sections:

1. UNIT: Identifies the name of the unit of instruction. A unit would contain a group of related competencies.

2. COMPETENCY: Identifies a specific task to be performed. This task would relate to a skill, knowledge, and/or attitude needed for on-the-job performance A competency statement contains an action verb and a noun (i.e., fill out a job application).

3. PERFORMANCE OBJECTIVE: A statement of exactly what the learner must do, indicating an activity that is to be observed and measured. A performance objective contains three bits of information: (1) conditions which describe the situation, limits, supplies, tools, and equipment which the student will have to work with (given what?); (2) behavior which states exactly what observable action the learner must demonstrate (does what?); and (3) standard which describes how much is required or how precise the quality of work must be done (how well?).

   V-TECS has developed catalogs of performance objectives in many vocational education areas which can be used for this section.

4. LEARNING ACTIVITIES: These are learning strategies or activities which the student performs. This section should list the methods used by the student to achieve the objective. The section can contain both required and optional assignments. Students should have some choice in selecting from readings, lectures, field trips, group discussions, role-play presentations, projects, seminars, media presentations, and other activities.

Learning strategies or activities should be written in precise terms so students will know exactly what to do. The learning activities should relate to the objective stated on the sheet. Remember, instructional methods are vehicles of student learning. Therefore, several learning activities may be needed before a satisfactory level of competency can be developed.

It is important to include a variety of activities. Activities can take place in large groups, small groups, or be individualized. Students learn better when there is a variety of activities to choose from.

It is also important to point out that this section should describe learning activities (i.e., demonstrations, films, practice exercises, etc.) and not be a list of steps in a procedure for doing a task. A list of steps would be contained on another sheet of paper called a job or information sheet.

An individualized approach to learning is possible with student competency sheets. People learn as individuals in their own manner and at their own rate. Using the sheet as a controlling device, the student completes the learning activities designed to achieve the needed competency. The teacher can use various methods, media, and equipment to individualize instruction.

A teacher should use many of the learning activities, information sheets, job sheets, assignment sheets, tests, quizzes, and any other instructional method that they have already developed and used. Any related sheets may be stapled to the competency sheet.

5. EVALUATION: This section includes various testing methods of determining the success of an instructional process to insure the accurate appraisal of student achievement in relation to performance of an objective. Paper-and-pencil tests can be used to determine what a person knows at a particular moment. These tests are used to determine how much was learned. However, performance is evaluated by direct observation through the use of performance tests. Student performance can be evaluated by examining a project, product, and/or the process one goes through in performing the job. Checklists and rating scales can be used to evaluate a student's performance. In most cases, the process is evaluated by a checklist and the product by a rating scale.

6. EXTENDED ACTIVITIES: Enrichment or extra activities are listed in this section for students who wish to go beyond minimum competency level in order to become more proficient in the competency area. Learning activity packages (LAPs), learning centers, youth organization activities (FFA, FHA/HERO, FBLA, DECA, VICA), some activity that can be done at home, and on-the-job activities can be used for these extra or enrichment activities.

Optional Additional Sections

Other sections may be added to the competency sheet format. Some sections which can be added include vocabulary (new words which students should learn that are related to the competency area) and supplies and materials (which are needed by the student in performing the learning activities).

WHEN SELECTING LEARNING ACTIVITIES...

- A learning activity is a plan of action that is used to reach a competency. Learning activities include methods and techniques that lead toward the attainment of a competency.

- Select strategies to help students accomplish objectives and obtain competencies.

- Help students understand why they are doing an activity or project.

- Focus on student learning rather than on teacher behavior.

- Use a variety of evaluation techniques to assess student attitudes, abilities and interests in order to plan meaningful instruction.

- Use a variety of teaching media, methods, and materials to motivate students.

- Involve students in preparing materials and establishing criteria for evaluation.

- Be creative in developing and adapting strategies that meet the needs and interests of your students for the real world of today and tomorrow.

Information Sheet II

INSTRUCTIONAL STRATEGIES

LECTURE

DISCUSSION

LABORATORY

DEMONSTRATION

Select or combine
resources, methods, and activities
to design

LEARNING ACTIVITIES

PRINTED MATERIALS:
- Textbooks
- Manuals
- Handouts
- Articles
- Magazines
- Modules
- Programmed Instruction
- Games
- Learning Activity Packages (LAPs)
- Job Sheets
- Information Sheets
- Assignment Sheets
- Tests
- Quizzes

PEOPLE AND PLACES OUTSIDE THE CLASSROOM:
- Guest Speakers
- Panel Discussion
- Guest Demonstrators
- Interviews
- Work-Experience

INSTRUCTIONAL TECHNOLOGY:
- Filmstrips
- Films
- Television
- Video-Tapes/Recording
- Slides
- Slide/Tape Shows
- Audio Cassettes
- Transparencies
- Opaque Projector
- Filmloops

INDIVIDUAL

SMALL GROUP
3-5 students

LARGE GROUPS

Read
Write
Illustrate
Practice
Observe
Buzz Sessions
Brainstorm
Role Play
Simulation
Interview
Survey
Student Panel

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Worksheet I

STUDENT COMPETENCY SHEET

UNIT:

COMPETENCY:

PERFORMANCE OBJECTIVE:

LEARNING ACTIVITIES:

EVALUATION:

EXTENDED ACTIVITIES:

COMPETENCY CHECKLIST FOR DEVELOPING STUDENT COMPETENCY SHEETS

Directions: Rate the performance on each of the following components of a student competency sheet. Indicate the level of performance by placing a check in the appropriate column. If, because of a special circumstance, a component is not applicable, place a check in the not applicable (N/A) column.

	Acceptable	Unacceptable	N/A
1. UNIT - correctly identified by title.			
2. COMPETENCY - clear, concise statement of competency or specific unit of work to be performed. Contains an active verb and noun.			
3. PERFORMANCE OBJECTIVE - statement of exactly what the learner must do. Contains (a) conditions, (b) behavior, (c) standard. (Statement can be taken directly from a V-TECS catalog.)			
4. LEARNING ACTIVITIES - listed are learning strategies/methods for directing the process of instruction. The learning activities provide for: - varied interests and abilities - real practice of the skill - simulated practice of the skill - a variety of learning styles and modes - large groups, small groups, and individualized activities			
5. EVALUATION - the desired student outcome and how the student will be evaluated are stated.			
6. EXTENDED ACTIVITIES - activities provide for opportunity to go beyond the minimum level of performance.			

COMPETENCY SHEET II

UNIT: Developing competency-based instructional materials.

COMPETENCY: Using student competency sheets in the classroom.

PERFORMANCE OBJECTIVE: Given information on how to use student competency sheets, describe in writing a method of using student competency sheets with your students. A checklist will be used to rate your performance. All items must receive an acceptable rating.

LEARNING ACTIVITIES:

________ 1. Read this entire competency sheet. If you think you can perform the objective, complete the evaluation section. If not, do as many activities as are needed.

________ 2. Read Information Sheet III on "Using Student Competency Sheets."

________ 3. Using Worksheet II, answer the questions about the method of using student competency sheets you think will be the most useful in your classroom/shop situation.

________ 4. Working with a small group of three to five participants, brainstorm for ten minutes on ways of using student competency sheets. Use Worksheet III to list the group's methods.

________ 5. Using Worksheet III, analyze the list by:

   a. Placing a check mark by the method the group considers the most useful.
   b. Writing a brief rationale for selecting this method of using student competency sheets.

EVALUATION: Using Worksheet IV, write a plan for using student competency sheets in your classroom. Include a brief rationale for using this method. Your plan will be rated according to the Competency Checklist for Using Student Competency Sheets. All items must receive an acceptable rating.

EXTENDED ACTIVITIES:

________ 1. Discuss your plan with a partner or with your workshop leader.

________ 2. Discuss with your workshop leader and/or within a small group the advantages and concerns you have about using student competency sheets.

________ 3. Develop student competency sheets for a unit of instruction and field-test them in your classroom. Discuss your findings with your department chairperson or area supervisor.

________ 4. If you find a better way of using competency sheets in your classroom, write a description of the method and submit it to the Maryland State Department of Education for inclusion in this booklet.

Information Sheet III

USING STUDENT COMPETENCY SHEETS

Effective instruction occurs when the competencies in a course are achieved by most students with the least expenditure of time and expense. Classroom effectiveness often depends upon the ingenuity and the organization skills of the teacher. Good classroom management involves the preparation of a course outline, course competencies, instructional strategies, and a grading plan. If a proper instructional management system is used, the classroom and/or shop can provide effective learning experiences for all students.

Teachers must establish a method for using student competency sheets in their classroom. The importance of good classroom management is evident if one thinks about the possible number of sheets circulating in the room at any given time. The accessibility and maintenance of instructional materials and supplies are crucial to effective classroom management. A well-designed plan or system can readily be maintained with the students' assistance.

The following methods are ways in which teachers are now using student competency sheets. Teachers may wish to use one method, combine methods, or use their own ingenuity to develop other methods of using student competency sheets. Whatever system the teacher decides to use, it must be fully explained to the students on the first day of class. A practice session with the students on the use of student competency sheets would facilitate the implementation of the system. It is important to make sure students know their role and the role of the teacher in a CBVE system.

Methods of Using Student Competency Sheets

1. Laminated Copy Method. Student competency sheets for specific competencies are located in a central vertical file. The sheets dealing with one competency are contained in one file folder. The competency sheets can be laminated to protect against damage. Laminate enough copies so each student in your largest class can have a copy, plus a few extra to compensate for damage or loss. Students are directed to use a laminated copy during the class period. At the end of the class period, the student returns the copy to the folder. The next day's class period, the student continues to work until the sheet is completed. All finished materials relating to that student competency sheet are given to the teacher to be rated and recorded. The teacher should inform the student about the rating he or she received on the competency and return any papers and materials to the student that can be kept by the student. A competency profile and/or progress chart can be used to keep trace of a student's performance.

2. Two-Folder Method. Each student has two file folders. The first folder is marked INCOMPLETE and contains a copy of all the student competency sheets for a particular unit or course. The second folder is marked COMPLETED and contains all the finished sheets and a competency profile on which the student may record his or her performance scores. As the student completes a competency sheet, the teacher rates and records the student's performance. The student marks his or her competency profile with the rating given by the teacher. The folders may be kept in a central vertical file or kept by the students.

This method provides the student with all of the student competency sheets for a unit or course prior to instruction. The profile in the second folder gives a clear indication of the student's progress at any given time.

3. Notebook Method. The student maintains a notebook with two sections. The first section is marked INCOMPLETE and contains all the student competency sheets for a unit or course. The second section is marked COMPLETED and contains all the finished sheets. As the student completes a student competency sheet, it is given to the teacher to be rated and recorded. The student places the marked sheet in the completed section. Since all student competency sheets are kept in the notebook, the student is aware of the number of competency sheets completed and the number of sheets which are incomplete.

4. One-Folder Method. The student is given one file folder. The student obtains a competency sheet from a central location (i.e., supply table) and works on that sheet until completion. When the teacher returns the rated competency sheet, the competency profile is marked as to the rating received and all work is filed in the folder. Thus, only completed competency sheets are kept in the folder.

   At the end of the course, the student keeps the folder which contains a record of his or her performance.

5. Bulletin Board Method. Instead of distributing competency sheets to each student, the teacher can post on the bulletin board the student competency sheets for the unit of instruction they are working on. The students would complete the learning activities on the sheets and hand in and be tested-out on each competency sheet. The sheets may be 8½" x 11", or if the teacher wants the students to be able to read the sheet from their seats, the sheet can be written on larger paper such as poster board.

NOTE: With any of the above methods, a competency profile can be used to record a student's progress in the course. Information on how to write and use a competency profile is contained in another booklet in this series.

WORKSHEET II

USING STUDENT COMPETENCY SHEETS

Directions: Select the method of using student competency sheets which you think will be the most useful for your classroom situation. Answer the following questions on the method you select.

1. Where are the student competency sheets located in the classroom?

2. How many copies would be needed for your students?

3. How and when would a student obtain a copy of the student competency sheet?

4. Where would a student put his or her completed work related to a student competency sheet?

5. Where should the student keep the completed student competency sheets?

6. How and when will students be tested-out on a competency sheet?

7. How will you keep track of a student's progress?

Worksheet III

BRAINSTORMING ACTIVITY

PART I.

Directions: Working with a small group of 3 to 5 participants, brainstorm for 10 minutes on ways of using student competency sheets. Write the methods below.

Follow these rules for brainstorming:

1. List every idea.
2. Don't discuss.
3. Don't judge.
4. Repetition of okay.

List Methods of Using Student Competency Sheets.

1.

2.

3.

4.

PART II.

Directions: As a group, discuss the above list and place a check mark by the method the group considers the most useful.

In 25 words or less, write a rationale in the space provided below for selecting this method of using student competency sheets.

Worksheet IV

MY PLAN FOR USING STUDENT COMPETENCY SHEETS

Directions: Write a plan for using student competency sheets in your classroom. Using the Competency Checklist on the next page rate your plan. All items must receive an acceptable rating.

COMPETENCY CHECKLIST
ON
USING STUDENT COMPETENCY SHEETS

Directions: Rate your performance on each of the following components of your plan for using student competency sheets. Indicate the level of your performance by placing an "X" in the appropriate column. If, because of a special circumstance, a performance component was not applicable, place an "X" in the N/A column.

	ACCEPTABLE	UNACCEPTABLE	N/A
Your plan should include the following components: 1. How you would orient your students to competency sheets.			
2. Location of completed and incompleted student competency sheets.			
3. Number of copies needed for students.			
4. Method of securing copies by the students.			
5. Placement of completed work.			
6. How you would test-out students on each sheet.			
7. How you would motivate students to use the sheets.			
8. Record and location of performance ratings for each sheet.			

APPLIED ACADEMICS IN THE VOCATIONAL SETTING

* Principles of Technology

Applied Communications

Applied Math

Presented for discussion by:

Jay Wood
Vocational Education Director

Janet L. Carlson, Administrator
Vocational Education, Student/Community Services

Washington State
Office of Superintendent of Public Instruction
Judith A. Billings, Superintendent

Northwest Conference on
Competency-Based Vocational Education

Bend, Oregon
October 18-20, 1989

Washington State
Principles of Technology Survey Report

Prepared by
Education and Work Program
Northwest Regional Educational Laboratory
101 S.W. Main Street, Suite 500
Portland, Oregon 97204

August, 1989

PRINCIPLES OF TECHNOLOGY ADMINISTRATOR SURVEY

Name: ______________________________ **District:** ______________________________

Position: ______________________________

Directions. This survey is intended to be completed by the administrator or staff person having the most knowledge about how the Principles of Technology class has been implemented in your district. Fill in the information to the best of your ability. Where numbers are requested, feel free to give your best estimate. If you have no information about a particular question you may wish to ask someone else in the district or just skip the question and answer the remaining questions. Information from this survey will be used in helping others in starting or expanding PT classes.

1. How many sections of PT are offered in your district at: the introductory level (Year 1) ____ ; at the advanced level (Year 2) ____ ?

2. How many students are enrolled this year by grade level at the introductory level?
   Below 9th grade level ___; 9th grade ___; 10th grade ___; 11th grade ___; 12th grade ___.

3. How many students are enrolled this year by grade level at the advanced level?
   Below 9th grade level ___; 9th grade ___; 10th grade ___; 11th grade ___; 12th grade ___.

4. What credits are offered to students in PT? (Check one or more)

   ____ Math credit
   ____ Science credit
   ____ Vocational education credit
   ____ Other (please specify)

5. How many teachers in your district teach PT? ____

6. How many are certified in: (Consider one or more per teacher)

   ____ Math
   ____ Science
   ____ Trade and Industry
   ____ Industrial Arts (Vocationally Approved)
   ____ Vocational Agriculture
   ____ Other (Please specify)__________________

7. Do you use instructional assistants (teacher aides) to help with demonstrations and labs? Yes _____ No _____

Education and Work Program
Northwest Regional Educational Laboratory
101 S.W. Main Street, Suite 500
Portland, Oregon 97204

(over)

8. Did your district seek state vocational approval of your PT program?

Yes _____ No _____

9. Is your PT program a state vocationally approved program?

Yes _____ No _____

10. How many students share a lab station in the introductory program? _______

How many share a station in the advanced program? _________

11. Please estimate program costs to the best of your ability.

	YEAR I Program	YEAR II Program
Total number of stations	______	______
Start Up Costs		
Equipment	______	______
Supplies	______	______
Media/Material	______	______
Staff Training Time	______	______

12. What funds were used for PT? (Check all that apply)

- ____ General district funds
- ____ State/federal vocational education funds
- ____ Funds from business and industry
- ____ Other sources (Please specify____)

13. How many students do you expect to be taking the introductory level PT in your district in 1989-90? ____

14. How many students do you expect to be taking the advanced level PT in your district in 1989-90? ____

15. How were teachers prepared to teach PT? (Check one or more)

- ____ College classes
- ____ State workshops
- ____ District inservice classes
- ____ Informal training from other teachers
- ____ No special training provided

16. What additional help do you need in the future from:

OSPI:____
ESD:____
Professional Teacher Associates:____
Other sources (specify source and help desired)_____________________________

17. Has the PT program been adapted for any special population? Yes____No____
If yes, for: (check one or more)

____Special education students
____At-risk students
____Gifted and talented
____Other (please specify)____

18. Is your PT program using any unique delivery arrangements (i.e. a consortium of districts sending students to a single location)? Yes____ No____ If yes, what arrangements?

19. What was the last unit you were able to complete in Year I of PT in school year 1987-88? ______________________________ How far do you plan to go this year?____

20. Have you utilized a special advisory committee for PT? Yes_____ No_____

21. Have you networked with any other schools/agencies to offer PT on a consortium arrangement? Yes _____ No _____

22. What source of equipment purchase did you use? Would you recommend this/these vendor(s) to others? (Answer yes or no next to each vendor you list)

23. Did PT teachers use: (Check one or more)

_____ Field trips
_____ Outside speakers

24. What do you feel have been the major strengths of your PT program?

25. What do you feel have been the major weaknesses of your PT program?

(over) 97

26. What factors were most important in influencing key administrators and Board members in your district to adopt PT?

27. What suggestions do you have for administrators in other districts who are interested in getting a PT class started (e.g., storage, planning time, student recruitment, etc.)?

28. What impact do you think PT might have had on other courses at the high school? (i.e., did PT draw students from other programs, affect enrollments from other classes, or put students into difficult choice-making situations; were other classes taken out of the curriculum to make room for PT?)

29. How would you structure staff development for new PT teachers?

30. Looking back, how would you arrange for staff release time, extended pay, visits to other sites, and setting up lab/classroom, etc.?

31. Would you be willing to serve as a consultant to other districts in the region interested in starting or improving a PT program? Yes _____ No _____

If yes, what are the areas of expertise you have related to PT planning and implementation?

THANKS FOR YOUR TIME IN COMPLETING THIS SURVEY. PLEASE RETURN IT TO DON ANDERSON AT THE OSPI.

Washington State
Principles of Technology Student Survey Report

A student survey was completed by 610 students in May 1989 from 23 schools throughout Washington. Of the students responding, 17 percent were female. Although the largest number of students were seniors (41 percent) or juniors (30 percent), there were also 24 percent in 10th grade and 4 percent in the 9th grade. About 90 percent were enrolled in the first year of PT and 10 percent in the second year.

Two thirds of the students in PT had completed first year Algebra and 31 percent had taken second year Algebra. Two-thirds of the students had taken or were currently enrolled in three or more semesters of science while nine percent reported no previous science.

While a quarter of the students had taken no vocational education classes, 41 percent reported having taken three or more vocational courses. The most frequently taken vocational classes by these PT students were metals, electronics and mechanics.

Fifty-five percent of the students had a grade point average of 2.0 to 2.9, 11 percent had under 2.0, and 33 percent had a 3.0 or higher. Thus, the PT course seems to have appealed to a wide diversity of students.

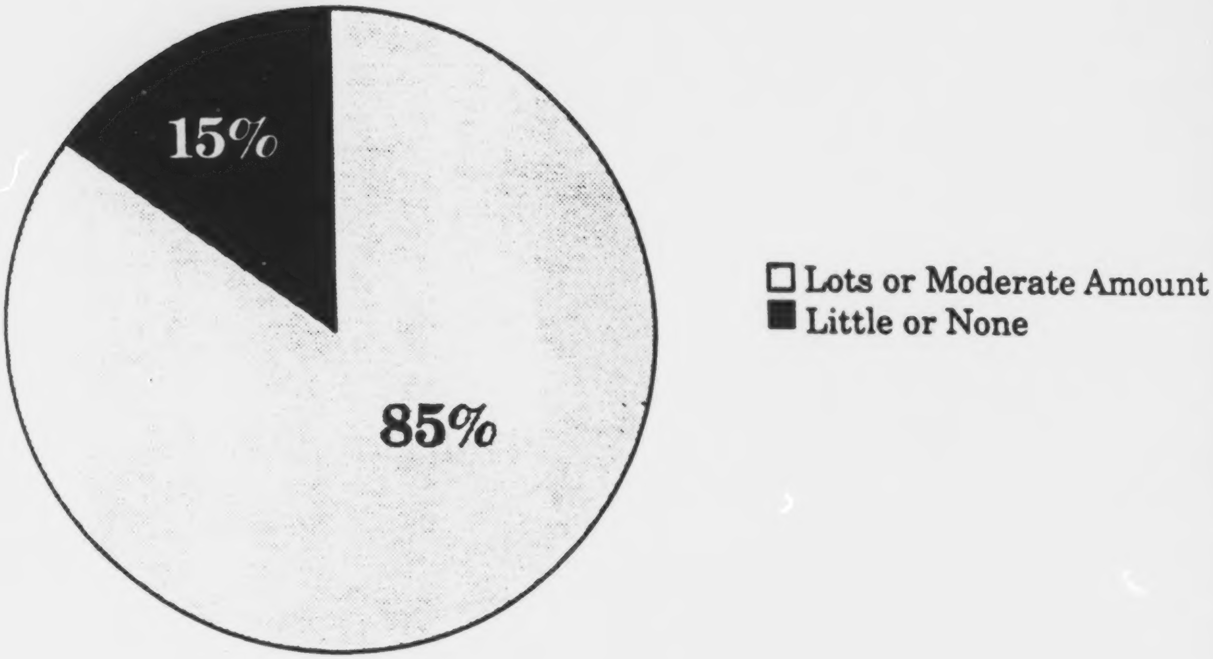
Eighty-four percent of the students felt they had learned a lot or moderate amount of science this year while only 15 percent said they had learned little or none. PT was very or moderately interesting to 85 percent of the students taking it. Of the students in the first year of PT, 26 percent indicated plans to take a second year of PT. The most common reasons were because the class was interesting or relevant to their future education or work. Of those not planning to take the advanced level of PT, the most common reasons were because it was not offered, they didn't need the extra course credits, there were other courses needed more, or they had a scheduling conflict.

After graduation, 26 percent plan to get a job, 16 percent to join the military, 71 percent to go to postsecondary school, and 10 percent indicated they didn't know. Students indicated over 50 different jobs they would like to enter with no single occupation being listed by more than five students.

Students were also asked to rate the quality of certain features of the PT program. Rated in descending order from high to low were: the teachers, laboratory activities, equipment, demonstrations, text, lectures, and video tapes.

NWREL
9/89

Amount of Science Learned in PT



NWREL
9/89

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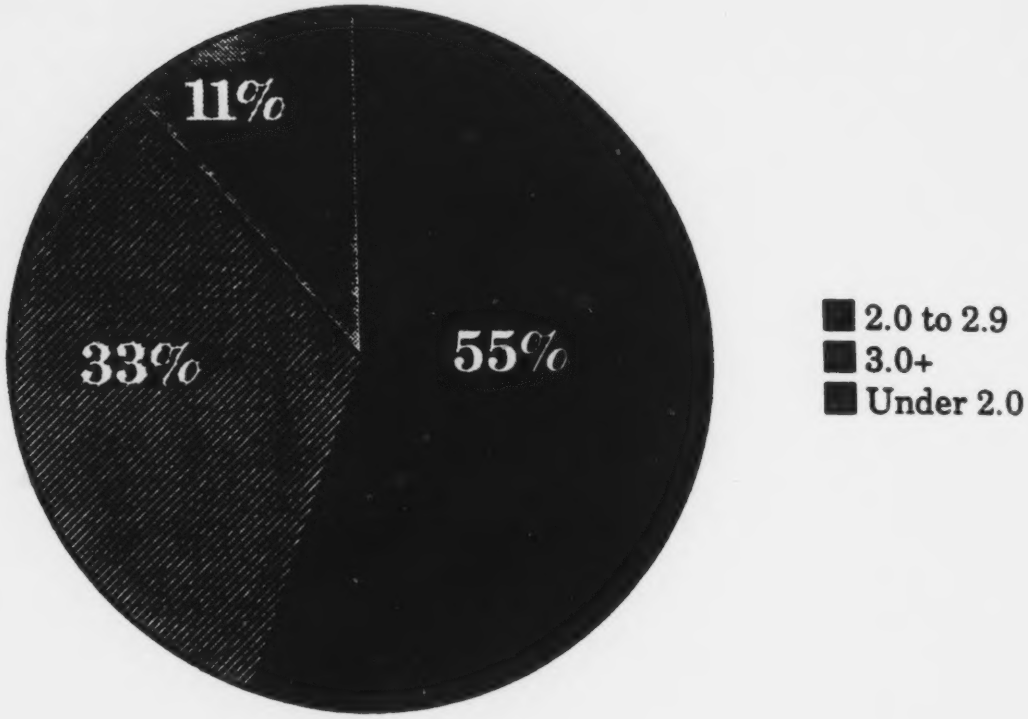
GPA's of 1988-89 PT Students



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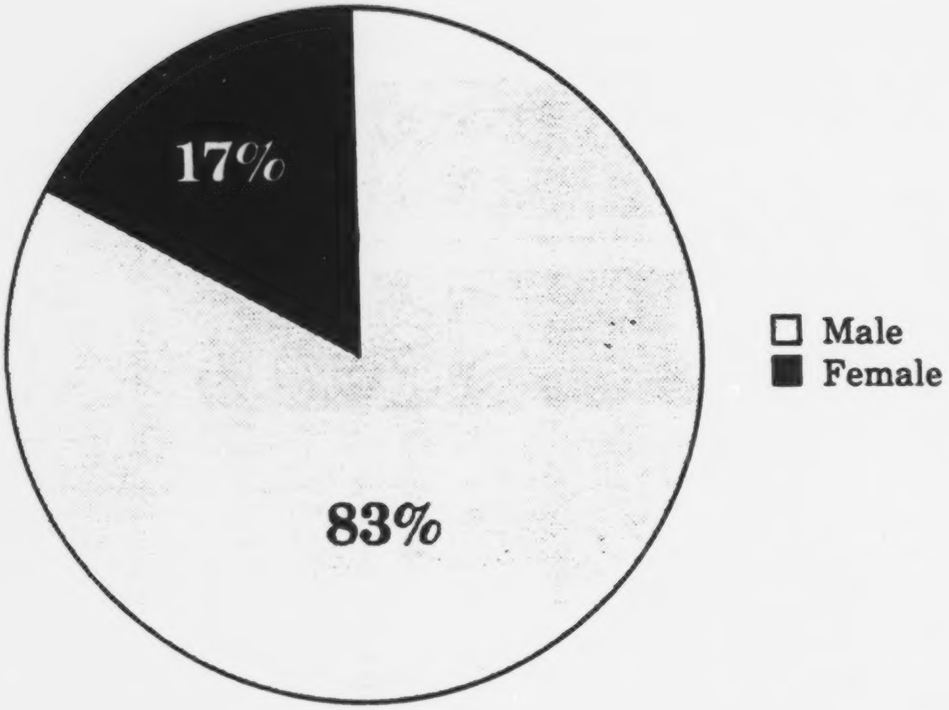
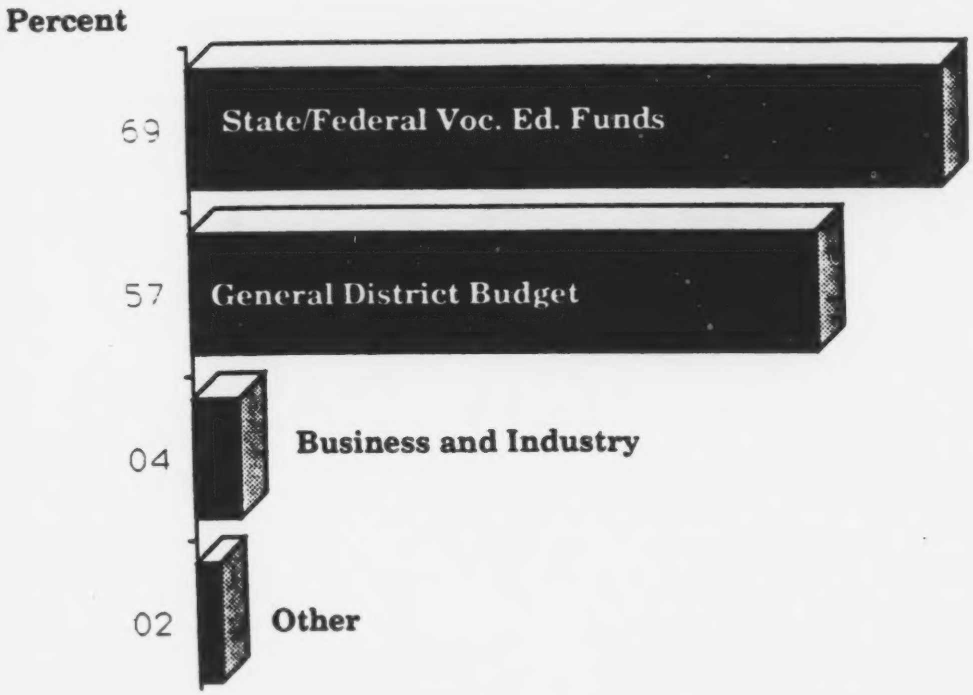
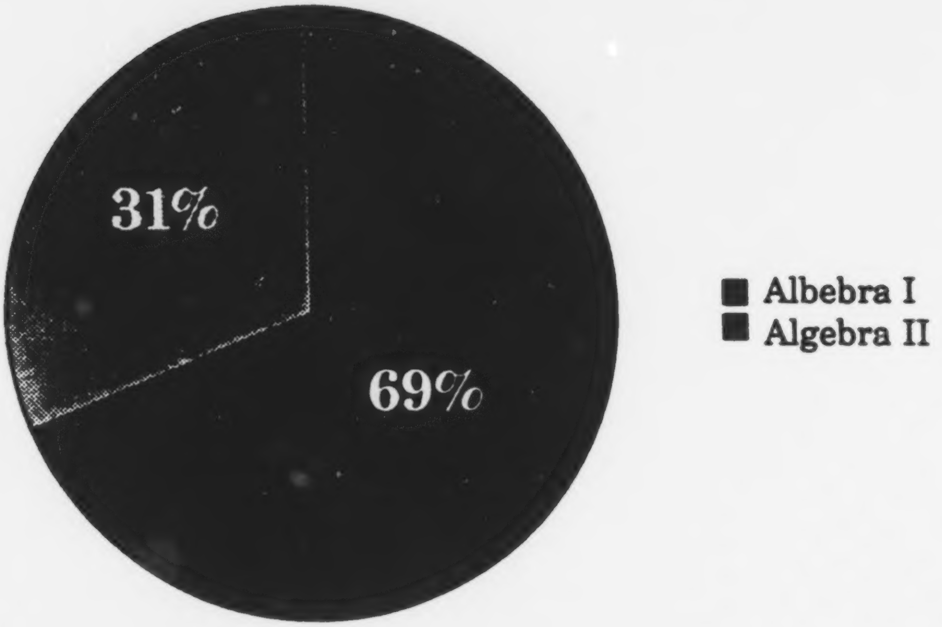
Sex of 1988-89 PT Students
(N = 610)

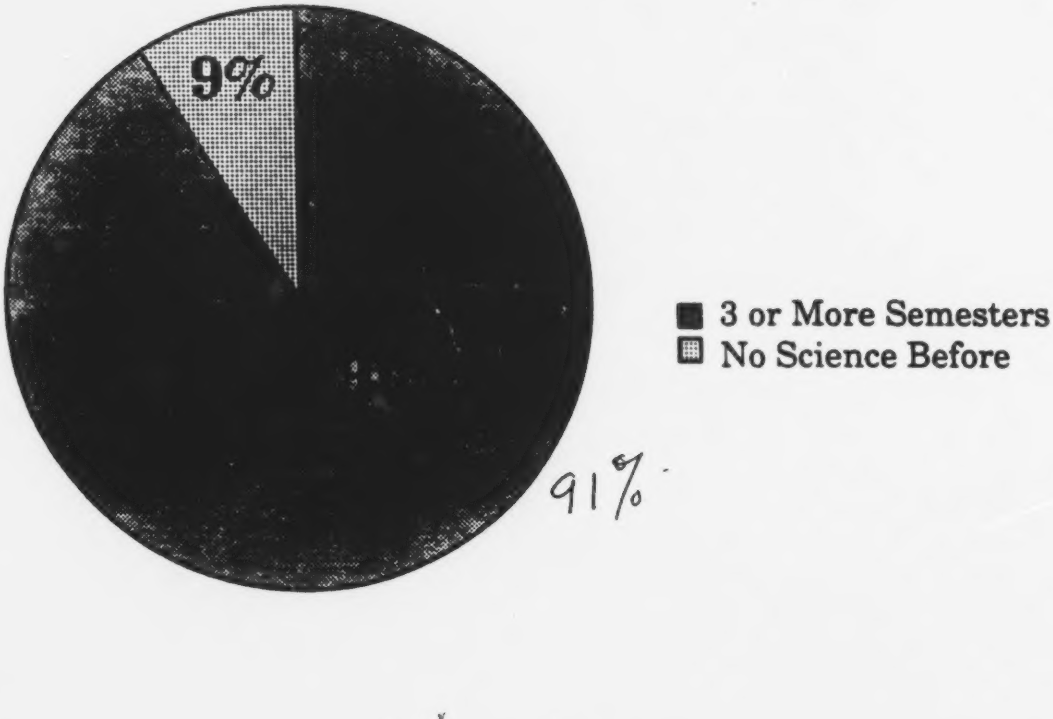


Funds Used to Support PT



Previous Math & Science Experience





NWREL
9/89

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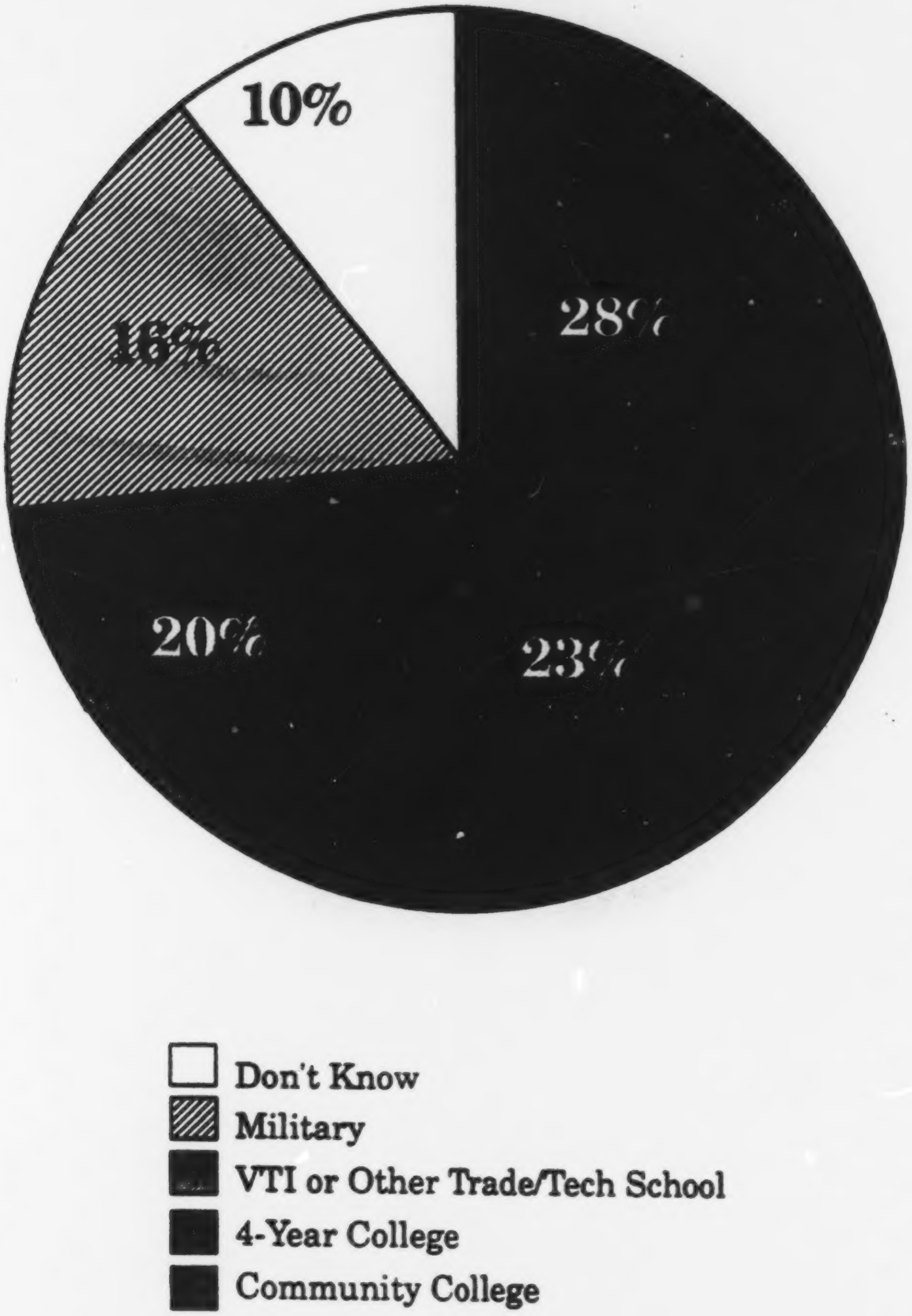
Post-High School Plans



NWREL
9/89

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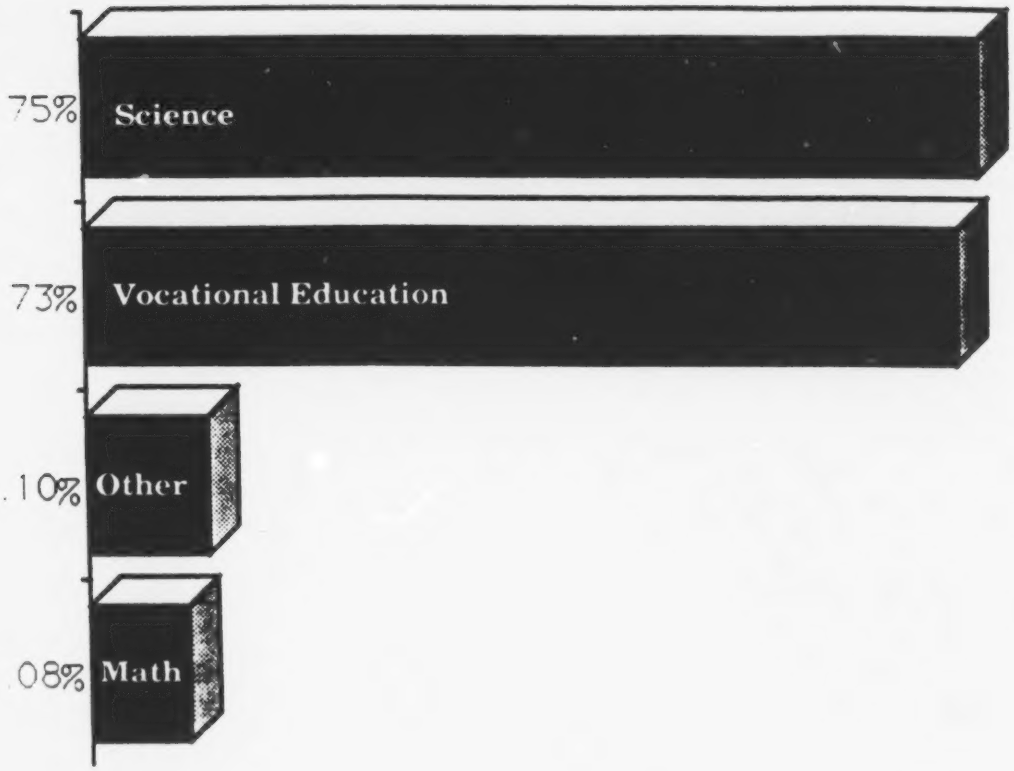
Credits Offered to PT Students

(N = 51 Sites in Oregon & Washington)



NWREL
9/89

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Why I'd Take PT Again

- Interesting class
- Relevant to future education or work

Why I Can't Take PT Next Year

- Year 2 not offered
- Course not needed
- Need required courses to graduate
- Scheduling conflict

GUIDELINES FOR VOCATIONALLY APPROVED PRINCIPLES OF TECHNOLOGY

1. Principles of Technology will not be approved for vocational funding if it is a stand alone course. Principles of Technology must be part of a sequence of vocational programs. As part of a sequence, Principles of Technology will (a) develop a student's knowledge base, (b) enable a student to assimilate more material and draw from a wider range of experience when he/she is enrolled in advanced vocational course offerings. Principles of Technology will be approved only if it is part of an articulated vocational curriculum.

2. High schools would be limited to offering Principles of Technology only three (3) periods per day.

3. Class enrollment is based on: (a) size of facility, (b) availability of equipment, (c) number of stations, (d) safety, (e) instructional demands, and (f) the availability of the instructor to work with students.

4. Principles of Technology shall include specific objectives in form of competencies needed to enter vocational or technical education. Safety, work attitudes, student management, and leadership development will be an integral part of instruction.

5. Instructors teaching Principles of Technology must meet the following requirements:

   a. Instructors meet vocational certification qualifications as described in "Requirements and Implementing Procedures for Vocational-Technical Personnel Certification" in any program area.

   b. An instructor teaching Principles of Technology will be vocationally certified in a vocationally approved program area. A Principles of Technology instructor needs to teach at least one class in a vocationlly approved program other than Principles of Technology.

   c. It is recommended that instructors will be provided a minimum of five (5) days extended time & travel expense for consultative coordination and instructional activities beyond the classroom environment to:

      1. Visit related industry and advanced vocational and technical education programs.
      2. Prepare instructional and curriculum materials.
      3. Attend state-initiated and professional association education workshops.
      4. Travel to professional and state-initiated meetings and technical committees.

   d. Successfully complete the Principles of Technology Workshop offered by SPI.

   e. If Principles of Technology is team taught, one (1) instructor must be vocationally certified.

PRINCIPLES OF TECHNOLOGY
CIP 210196
July 27, 1989

District Voc Dir/Adm & Phone Number	Bldg.	Instructor	Endorsed Certificate & Year Pgm Started	# of Students Enrolled M	 F	 Total
Anacortes Ms. Kathrin Carr (206) 293-5912	Anacortes HS	Dave Starkovich	/1989-90			
Bainbridge Island Thomas Hyde (206) 842-4787	Bainbridge Isl HS		/1989-90			
Battle Ground Cheryl Mayo (206) 687-5171 Ext 226	Battle Ground Prairie HS	Chris Fouts	Yes/1988-89	50	5	55
Bellevue Roger Wing (206) 455-6074 S/369-6074	Newport HS	William Rahr	Yes/1988-89	21	10 =	31
Bethel Robert Sparks (206) 535-0950 Scan 754-2479	Bethel HS	Mark Long	Yes/1989-90			
Camas Susan Garrett (206) 834-2811	Camas HS	Conrad Tornow	Yes/1988-89			
Central Kitsap Mourine Anduiza (206) 692-3205	Central Kitsap HS	James Washington	/1987-88	19	1 =	20
		Art Reese	Yes/1987-88	31	3 =	34
	Olympic HS	Gerald Osman	Yes/1987-88	46	4 =	50
Chehalis SD Dick Lutz, Voc Dir (206) 748-0273	W.F. West HS	Steve Kostanich	/1989-90			
Clover Park Alson E. Green (206) 756-5500 S/221-5500	Lakes HS	Douglas Delmonte	Yes/1987-88	49	16 =	65
	Clover Park HS	Joel Parker	Yes/1987-88	10	14 =	24
Everett Glenn Grandy (206) 339-4200 S/539-4450	Phoenix Altern. Ctr.	Joe Wermus	Yes/1987-88	14	6 =	20
Evergreen Sarah Melching (206) 256-6068	Evergreen HS	Doug Rogers	Yes/1988-89	17	7 =	24
Highline SD Jack Starr (206) 433-0111	Evergreen H.S.	Bob Newton	Yes/1988-89	19	18 =	37

PRINCIPLES OF TECHNOLOGY
CIP 210196

(continued)

Issaquah Ron Louviere (206) 392-0750	Issaquah Sr HS	Jeff Dineen	Yes/1988-89	19	5 =	24
Kelso Paula Radich (206) 577-2422	Kelso HS	John Benson	Yes/1988-89	18	5 =	23
Kennewick Richard Hare (509) 735-8790	Kennewick HS	Tom Staly	Yes/1987-88	35	1 =	36
Kennewick SD Bruce Hawkins (509) 582-1200	Kamiakin HS	Arlis Hoglen	Yes/1987-88	10	1 =	11
Kent Nils Ladderud (206) 859-7261 S/531-7261	Kentwood HS	David Bilyeu	Yes/1987-88	8	1 =	9
Lake Washington Donald W. Fowler	Juanita HS	Tom Short	Yes/1987-88	35	3 =	38
		Don Beck	No/1987-88	3	11 =	14
(206) 828-5601	Lk Washington HS	Pete Sorensen	Yes/1987-88	45	4 =	49
		Bob Severson	No/1987-88	23	1 =	24
	Elective HS Redmond HS	Mel Kolstad	/1987-88			
Lopez Island Ken Axelson (206) 468-2201	Lopez Island HS	Steve Adams	Yes/1988-89	13	4 =	17
Morton SD Richard Conley (206) 496-5137	Morton HS	Ross Jones	/1989-90			
Mukilteo SD Claudia Buxton (206) 356-1276	Mariner HS	Bill Ardissono	/1989-90			
North Kitsap Dale Shotwell (206) 779-5454	North Kitsap HS	Don Wyatt	Yes/1988-89	15	3 =	18
Northport Christopher Loftus (509) 732-4430	Northport HS	William Charlton				
Northshore Dennis Milliken 206) 485-0431	Woodinville Hs	Bob Connell	No/1987-88	20	3 =	23
	Bothell HS	Grey Snyder	Yes/1987-88	15	2 =	17
		Sherm Williamson	/1987-88	(Team Teach)		

PRINCIPLES OF TECHNOLOGY
CIP 210196

(continued)

North Thurston Allan Burmester (206) 456-7737	Timberline HS	Bob Simons	Yes/1987-88	14	5 = 19
Omak SD Ron DeHaan (509) 826-5150	Omak HS	Ted Danielson	/1989-90		
Puyallup Karen Hansen (206) 841-8761	Puyallup HS	Dave Weir	Yes/1987-88	21	5 = 26
	John Rogers HS	Mark Price	Yes/1987-88	28	1 = 29
Seattle Jerry Butts (206) 281-6288 S/528-6288	Hale HS	Kirbey Vanwey	Yes/1988-89	22	2 = 24
	Rainier Beach HS	Keith Harding	Yes/1987-88	20	2 = 22
Snoqualmie Valley Carol Lawrence (206) 888-1921	Mt Si HS	David White	Yes/1987-88	10	1 = 11
South Kitsap George Zimmerman (206) 876-7318	S. Kitsap HS	Tom Price	Yes/1988-89	30	3 = 33
Spokane Dr. Ruth Bragg (509) 353-3363 S/373-5242	Spokane VSC	Ron Macy	Yes/1988-89	22	0 = 22
Tacoma Wm Mohler (206) 596-1610 S/349-6800	Lincoln HS	Wray Bartroff	Yes/1988-89	16	5 = 21
Yakima Dr. Katherine Crandall (509) 575-3453	Davis HS	James Wright	Yes/1987-88	10	2 = 12
Yelm Barbara Ritter (206) 458-7777	Yelm HS	Tom Harn	Yes/1988-89	11	3 = 14
33 Districts	42 Programs	45 Instructors	Yes/32 No/3	739	157 = 896
				Students Enrolled	

Unanswered/10

Estimated Enrollment
April 1989

9/14/89
TM#1/21

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CORRELATION OF SCIENCE
COMMON CURRICULUM GOALS
WITH PRINCIPLES OF TECHNOLOGY

1.0 Concepts. Students apply an understanding of fundamental concepts on which science is based.

STUDENTS WILL BE ABLE TO:	PROJECTIVES FORCE																								WORK																	
	1. 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	2. 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.1 Demonstrate CAUSE AND EFFECT: Related series of two or more events that lead one to believe that nature is predictable (e.g., acid rain affecting plant growth, changing the temperature of a material, chemical reactions).*																																										
b Demonstrate an understanding of factors involved in a cause and effect relationship by predicting the outcome of interacting events.			x		x	x	x		x			x			x			x			x						x		x	x			x			x			x		x	x
c Identify relationships and regularities from which a general statement can be made about the effects of change (e.g., time increase increases reaction rate).			x	x	x	x			x	x		x						x		x	x								x	x	x			x	x	x				x	x	x

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1.1 (Continued)

RATE

3. 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		x		x				x						x						x			
			x	x	x					x	x				x						x	x	x

RESISTANCE

4. 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		x		x	x			x		x	x			x		x	x			x			x
			x	x					x	x	x				x						x		x

ENERGY																								POWER																	
5. 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	6. 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		x						x		x				x		x	x			x		x	x																		
			x	x	x				x	x	x				x	x	x				x	x	x				x	x	x				x	x	x			x	x	x	

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1.1 (Continued)

FORCE TRANSFORMERS

7. 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23

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Principles of Technology

* **Applied Communications**

Applied Math

Presented for discussion by:

Jay Wood
Vocational Education Director

Janet L. Carlson, Administrator
Vocational Education, Student/Community Services

Washington State
Office of Superintendent of Public Instruction
Judith A. Billings, Superintendent

Northwest Conference on
Competency-Based Vocational Education

Bend, Oregon
October 18-20, 1989

SPI
JUDITH A. BILLINGS. J.D.   Superintendent of Public Instruction

January 25, 1989

TO: All School District Superintendents and Vocational Directors/Administrators

FROM: Janet L. Carlson
Assistant Superintendent

RE: APPLIED COMMUNICATIONS IMPLEMENTATION PROCEDURE 1989-90

- -

The Superintendent of Public Instruction has purchased membership in the Applied Communication Project through the Agency for Instructional Technology (AIT). This membership was purchased through the Division of Vocational-Technical and Adult Education Services and is intended to serve as an enrichment opportunity for districts wishing to strengthen vocational program basic skills and core competencies. The Division of Vocational-Technical and Adult Education Services is working cooperatively with the Basic Education Section, Division of Instructional Programs and Services, to make this program available to districts who wish to utilize it within non-vocationally funded programs.

Enclosed is information regarding the application process for implementation procedures/guidelines, optional linkage with Basic Education/Language Arts, and Applied Communications information. Please note the goals for the program and the guidelines for implementing. Should your district wish to apply for implementation (1989-1990), please complete the appropriate forms and submit to SPI by March 1, 1989. Districts receiving approval for implementing the applied courseware will be notified between March 15-30, 1989. Inservice dates and locations will be announced by April 1.

We want to document and be able to offer inservice to non-vocational staff teaming with vocational instructors. Therefore, the application to facilitate this is also enclosed.

Only SPI approved districts will be able to purchase materials from AIT during the implementation period (1989-1990). For further information contact: Mari C. Shaw, Business Education Program Specialist at: (206) 753-5647 or SCAN 234-5647.

Return applications and forms by March 1, 1989 to:

Mari C. Shaw
Business Education Section
Division of Vocational-Technical
and Adult Education Services
Old Capitol Building - FG-11
Olympia, WA 98504

cb
Enclosures

Old Capitol Building. FG-11. Olympia. Washington 98504-3211

SPI
STATE OF WASHINGTON
Superintendent of Public Instruction

VOCATIONAL-TECHNICAL & ADULT EDUCATION SERVICES
Business and Office Education
Old Capitol Bldg., FG-11, Olympia, WA 98504-3211

APPLICATION FOR APPLIED COMMUNICATIONS PROGRAM
1989-1990 SCHOOL YEAR

I. School District: ____________________

Signatures: ____________________
Superintendent

____
Vocational Director/Administrator

Vocational Area(s) in which program will be delivered: ____________________

- -

	Circle One Answer	
1. Will the district purchase courseware and necessary equipment for the Applied Communications Program? (Modules = $438.75)	Yes	No
2. Will the district fund the inservice fee for instructor(s) to participate in the SPI-sponsored inservice activities? (Anticipated late June, 1989)	Yes	No
3. Will the district designate an instructor(s) to inservice other vocational staff on the integration of Applied Communications in each program area?	Yes	No

4. List the name(s) of the vocational instructor(s) responsible to deliver instruction in Applied Communications:

Name and Certificate Number	Program Area
Name and Certificate Number	Program Area
Name and Certificate Number	Program Area

OPTIONAL LINKAGE OF VOCATIONAL EDUCATION/BASIC EDUCATION ACADEMIC COMPONENT

II. List the name(s) of the academic instructor(s) team teaching the Program with Vocational areas:

Name and Certificate Number	Program Area/Department
Name and Certificate Number	Program Area/Department
Name and Certificate Number	Program Area/Department

FORM SPI 88-329 (1/89)

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Name of Contact Person who will respond to the need for further details on the program: ______________________

Address: ______________________

____

Telephone: ______________________

III. PARTICIPATION ASSURANCES: By signing the above, the district assures that:

1. Vocational Applied Communications is an integrated component of a planned vocational program sequence for students with a vocational career objective. Classes will not be funded as standalone offerings.
2. There will be coordination and articulation among the vocational programs integrating Applied Communications and with the language arts programs.
3. During the second year of the implementation, the trained, vocationally certified instructor(s) would be responsible for providing inservice training to vocational instructors within the district on how to integrate Applied Communications courseware into their vocational programs. The district would be responsible for all costs for providing this inservice.

IMPLEMENTATION PROCEDURE

APPLIED COMMUNICATIONS COURSEWARE

1. The instructor(s) must be vocationally certified for the class to generate vocational FTEs.
    a. If the class is team taught, at least one instructor MUST BE vocationally certified.

2. Instructor(s) MUST attend SPI inservice--if team will be teaching, team MUST attend the inservice.
    a. Districts will pay all teacher costs for attending a 30-hour inservice session. The date for the inservice is tentatively scheduled for mid-June.

3. Districts MUST provide materials, supplies and equipment to deliver Applied Communications. The minimum cost of modules is $438.75 plus postage. There may be additional costs incurred in delivering the program to the district contingent on existing equipment/supplies.

4. The district will provide extended contract time to all instructors responsible for delivering the program in addition to existing extended days. These extended days are designed to establish and organize the Applied Communications courseware.

5. Applied Communications materials may be integrated into either a 90- or 180-hour vocationally approved class.

6. The courseware needs to be approved by the district's Advisory Committee (either general or program) and documentation of the approval MUST BE submitted with the application form to SPI.

7. The district will submit an annual report of the program, listing the objectives accomplished and recommendations for the next year. This report shall also include: data relative to students served, a summary of how inservice relative to Applied Communications will be delivered within the district and the completion of a SPI self-evaluation form.

APPLIED COMMUNICATIONS INFORMATION

Materials/Courseware

1. All 15 modules will be available for purchase by April 1, 1989. Currently Modules 1-9 are available. Attached is a listing of all the lessons complete to date. Each module has 10 lessons. There are a total 150 lessons in the program. Each lesson could consume one class period.

2. Enclosed is a Resource Material List. On the backside of this list is an Order Form. To order all the materials, 15 modules and the implementation kit the cost would be: $29.25 x 15 or $438.75.

   a. Each module includes: the video, Instructor's Guide, Student Worktext and the notebook to house the materials.

   b. Additional guides, worktexts and videos may be purchased separately.

   c. SPI will not reproduce any of the materials. All materials must be purchased directly from AIT (address and telephone number listed below). Only approved districts will be able to purchase materials from AIT.

Agency for Instructional Technology (AIT)
P. O. Box A
Bloomington, IN 47402
1-800-457-4509 -or- (812) 339-2203

Reporting:

1. Because Applied Communications courseware will be integrated into existing vocational programs, there will be no change in reporting from what is currently being done.

Inservice and Training:

1. There will be a statewide inservice workshop tentatively being planned for mid- to late June. Instructors attending this workshop should have their own materials with them. Therefore, if you receive approval for Applied Communications, please order your materials as soon as possible.

2. An informative session on Applied Communications is being planned for early to mid-February. This meeting will be optional for administrators and instructors to attend to learn more about Applied Communications.

3. Both college credit and clock hour/continuing education renewal units will be available through SPU and Clover Park VTI for those instructors wanting three (3) quarter credits. The cost for credit will be $69 and instructors will register for this the first day of the inservice in June. Thirty (30) clock hours are also available for the June workshop.

4. Districts may send instructors to the AIT workshop being held the end of April. This will be held in Memphis. Places and dates will be confirmed by the middle of February. Costs incurred for this workshop will be the responsibility of the local district. The state will be making provisions to inservice a small number of trainers to deliver instruction at the June statewide workshop in the Sea-Tac area.

Credit:

1. Equivalency credit for classes integrating the Applied Communications courseware is a local district decision.

Follow-up/Evaluation:

1. Each district will be asked to submit an annual report. One of the components will be an evaluation form, to be developed by SPI, and a listing of recommendations for the second year of the pilot. More information will be provided on this at a later date.

Advisory Committee Interaction:

1. Accompanying the application, each district will be asked to submit documentation from the general or program Advisory Committee that they approve the implementation of Applied Communications courseware into the existing vocational program.

Applied Communication

Resource Material List

Description	*Cost* †
Instructor's Kit (15 modules) Includes VHS/Beta combination white album with clear overlay on front, spine and back for slip covers. One each Instructor's Guide (three hole punched); one each Student Worktext and one VHS or Beta videocassette. (The purchase of all 15 modules will include the Implementation Kit.)	$29.25* per module x 15 = $438.75
Instructor's Guide Three hole punched, bound	5.00** per module
Instructor's Guide Three-hole punched, not bound, shrink wrapped	5.00** per module
Student Print Student Worktext, bound	2.60** per module
Videocassette	
VHS or Beta	11.50** per module
3/4" U-matic	31.50** per module
Vinyl Album VHS/Beta or 3/4" U-matic mold, with front, spine and back slip covers.	7.00* per module
Implementation Kit "About *Applied Communication*" VHS videocassette in white album with clear overlay on front, spine and back for slip covers, one each Information Handbook, one each Workshop Leader's Handbook, Information Folder	$29.25*
Large Brochure *Applied Communication* three-fold brochure	$25.00** (per 100)
Small Brochure *Applied Communication* brochure/poster	$11.00** (per 100)

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* Price includes assembly and shipping preparation but does not include actual shipping costs.
** Price does not include actual shipping costs
† Prices subject to change.

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4/21/88

APPLIED COMMUNICATION PARTICIPANT'S LIST

LEVEL I TRAINING WORKSHOP
Tacoma, Washington, June 21-24, 1989

Stewart Ailor
Level I Trainer
Cusick High School
P. O. Box 270
Cusick, WA 99119
(509) 445-1125

Karl Albrecht
Foster High School
4242 South 144 Street
Seattle, WA 98168
(206) 392-1023

Mary Anne Alexander
North Kitsap High School
1780 Northeast Hostmark
Poulsbo, WA 98370
(206) 779-4408 ext 234

La Vonne Bahm
Lincoln High School
701 South 37
Tacoma, WA 98408
(206) 596-2000

Fred Bannister, Supervisor
Reading/Language Arts
Old Capitol Bldg., FG-11
Olympia, WA 98504
(206) 753-7389

Rose Barden
Lincoln High School
701 South 37
Tacoma, WA 98408
(206) 596-2000

Shirley Bennett
Steilacoom High School
54 Sentinel
Steilacoom, WA 98388
(206) 588-1885

Donna Bowling
Battle Ground High School
204 West Main
Battle Ground, WA 98604
(206) 687-5171

John Bredstrand
Evergreen School District
13905 Northeast 28 Street
Vancouver, WA 98682-8099
(206) 256-8067

Stephanie Bredstrand
Evergreen School District
13905 Northeast 28 Street
Vancouver, WA 98682-8099
(206) 256-8067

Elaine Butler
Curtis High School
8425 - 40 West
Tacoma, WA 98466
(206) 564-3422
(206) 564-0387 (home)

Sharon Calloway
Wilson High School
1202 North Orchard
Tacoma, WA 98406
(206) 596-2200

Arlayne Clow
Level I Trainer
B.E.S.T. High School
6500 - 111 Avenue Northeast
Kirkland, WA 98033
(206) 828-3289

Toni Croshaw
Naches Valley High School
P. O. Box 159
Naches, WA 98937
(509) 653-2342

Glen Dacus
Kentridge High School
12430 Southeast 208
Kent, WA 98031
(206) 631-5507

Sharron Danley
Highline School District
15675 Ambaum Blvd. S.W.
Seattle, WA 98166
(206) 244-9300

Martha Davis
Steilacoom High School
54 Sentinel
Steilacoom, WA 98388
(206) 588-1885

Leslie Ewer
Issaquah School District
565 Northwest Holly
Issaquah, WA 98027-7003
(206) 228-3050

Paula Felton
Eisenhower High School
702 South 40 Avenue
Yakima, WA 98908
(509) 575-3270

Kerri Ferate
Central Kitsap School District
P. O. Box 8
Silverdale, WA 98383
(206) 692-3120 ext 36

Sam Giampietri
Chewelah School District
Box 47
Chewelah, WA 99109
(509) 935-4199

Connie Givens
Educational Service Dist. 112
1313 Northeast 134 Street
Vancouver, WA 98685-2788
(206) 887-4509

Katharine Gleysteen
Level I Trainer
Central Kitsap School Distric
P. O. Box 8
Silverdale, WA 98383
(206) 692-3133

Roy Godbey
W. F. West High School
342 Southwest 16 Street
Chehalis, WA 98532
(206) 748-0273

Barbara Haueisen
Lincoln High School
701 South 37
Tacoma, WA 98408
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Project Development

Applied Communication was funded and developed by a consortium of state and provincial education agencies in association with the Agency for Instructional Technology (AIT).

Print materials and video scripts prepared by AIT were reviewed by language arts and workplace specialists, participating consortium agencies, content specialists, teachers, and other occupational-area specialists.

Print and video materials were field tested with 1,500 students and their teachers at 60 sites across the United States and Canada.

Participating Agencies

Alabama State Department of Education
  Division of Vocational Education
Alaska Department of Education
  Office of Adult and Vocational Education
Alberta Education and ACCESS Network
Arizona Department of Education
  Division of Vocational/Technological Education
Arkansas Department of Education
  Vocational and Technical Education Division
Colorado State Board for Community Colleges and Occupational Education
Washington, D.C. Division of Career & Adult Education
Delaware Department of Public Instruction
Florida Department of Education
  Division of Vocational, Adult, and Community Education
Georgia Department of Education
  Office of General & Vocational Instruction
Hawaii Department of Education
Idaho Division of Vocational Education
Illinois State Board of Education
  Department of Adult, Vocational and Technical Education
Indiana Commission on Vocational and Technical Education
Iowa State Department of Education
  Bureau of Career Education
Kansas State Department of Education
Kentucky Department of Education
  Office of Vocational Education
Maryland State Department of Education
  Division of Vocational/Technical Education
Massachusetts Department of Education
  Division of Occupational Education
Minnesota
  Northeast Metro Intermediate School District *916
Mississippi Department of Education
  Bureau of Vocational Technical Education
  Bureau of School Improvement
  Bureau of Planning and Policy
Missouri Department of Elementary and Secondary Education
Nebraska Department of Education
  Division of Vocational Education
Nevada Department of Education
  Occupational and Continuing Education Branch
New Hampshire Department of Education
  Division of Instructional Services
New Mexico State Department of Education
  Division of Vocational Technical and Adult Education
North Carolina State Department of Public Instruction
  Division of Vocational Education
Ohio Department of Education
  Division of Vocational and Career Education
Oklahoma State Department of Vocational and Technical Education
TVOntario
Oregon Department of Education
  Division of Vocational Education
  Division of Curriculum and School Improvement
Rhode Island State Department of Education
  Division of Vocational Education
South Carolina Department of Education
  Office of Vocational Education
South Dakota Department of Education and Cultural Affairs
  Office of Vocational-Technical Education
Tennessee Department of Education
  Division of Vocational Education
Utah State Office of Education
Vermont State Department of Education
  Division of Adult and Vocational-Technical Education
Virginia Department of Education
  Vocational and Adult Education
Washington
  Office of the Superintendent of Public Instruction
West Virginia State Department of Education
  Bureau of Vocational, Technical and Adult Education
Wisconsin Department of Public Instruction
  Bureau for Vocational Education
Wyoming Department of Education, Vocational Programs Unit, and the University of Wyoming Department of Vocational Education

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Evolving from a television library begun in 1962, the nonprofit American-Canadian Agency for Instructional Technology (AIT) was established in 1973 to strengthen education through technology. AIT pursues its mission through the development and distribution of video and computer programs and printed materials in association with state and provincial education agencies. In addition, AIT acquires, enhances, and distributes programs produced by others. AIT programs are used in schools throughout the United States and Canada. The agency is based in Bloomington, Indiana.

Together . . . resources for today's learner

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APPLIED COMMUNICATION

A resource for high school and other students that

- teaches communication/language arts/English skills as they apply in the workplace
- sharpens reading, writing, listening, speaking, problem-solving, visual, and nonverbal skills
- strengthens the academic foundations of the curriculum
- features applications for agriculture, business/marketing, health occupations, home economics, and technical/trade/industrial areas.

USI
Agency for Instructional Technology

The Need for Applied Communication

"Without doubt, the most overwhelming need I've observed in students is for proficiency in basic communication skills.

"The ***Applied Communication*** modules . . . surpass anything I've seen in years. Here is educational gold."

Steve Calkins, English teacher,
North Valley High School, Oregon

Whether students plan to enter the job market immediately after high school or pursue a postsecondary education, they must communicate effectively. But not all students are motivated by traditional communication courses.

Applied Communication appeals to a variety of learning styles. Students don't just talk about communication, they *learn* and *practice* it—in memos, letters, and reports; conversations and meetings; charts and graphs.

Applied Communication is not a remedial course. It is designed primarily for high school students, but may be useful in postsecondary, adult education, and retraining settings.

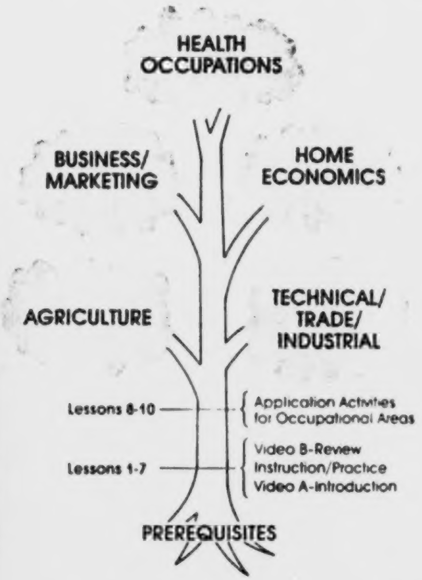
The student competencies on which ***Applied Communication*** is based have been verified by vocational education and language arts teachers, administrators, and workplace specialists.

Whether integrated into other courses or offered as an alternative to traditional language arts, ***Applied Communication*** teaches the communication skills that students must have to compete in today's world.

The *Applied Communication* Modules

Communicating in the Workplace
Gathering and Using Information in the Workplace
Using Problem-Solving Strategies
Starting a New Job
Communicating with Co-Workers
Participating in Groups
Following and Giving Directions
Communicating with Supervisors
Presenting Your Point of View
Communicating with Clients and Customers
Making and Responding to Requests
Communicating to Solve Interpersonal Conflicts
Evaluating Performance
Upgrading, Retraining, and Changing Jobs
Improving the Quality of Communication

Structure of an *Applied Communication* Module



Components

Applied Communication consists of 15 instructional modules, each with ten 40- to 55-minute lessons. The modules can be used singly—in any order—to broaden existing communication/ language arts/English or vocational/technical courses. Or all 15 modules can be used as a yearlong course.

Each module features a variety of learning activities. Lessons 1 through 7 provide instruction and practice in communication skills as they are used in the workplace. The activities of Lessons 8 through 10 develop and refine communication skills in agriculture, business/marketing, health occupations, home economics, and technical/trade/industrial applications.

Instructor's Kit—The comprehensive Instructor's Kit for each module features (1) an Instructor's Guide with overhead transparency and student activity masters, (2) reproducible student Worktext, and (3) videotape. The Instructor's Guide contains lesson plans, a chart of student competencies covered in the module, and an annotated resource list of related materials.

Video Programs—Each module has two video programs—Video A to introduce the module and Video B to review its content—both about ten minutes long. Taped in a variety of work settings, the video programs bring the workplace into the classroom and show students the importance of communication skills on the job.

Student Worktext—The student Worktext for each module supplies the material for student activities—individual task sheets with lists of goals and objectives, background information, checklists, worksheets, schedules, letters, and charts.

NOVELS

Alger, Horatio, **RAGGED DICK** (1897) and **MARK THE MATCH BOY**. Also **RAGGED DICK & STRUGGLING UPWARD**, Penguin, 1985. Stories of young boys who rose from poverty to middle class respectability through hard work and cheerful perseverance. Easy reading on the "great American dream" of the early 1900's.

Bellamy, Howard, **LOOKING BACKWARD**, Penguin, 1982. Written in 1888, this is the story of Julian West, who awakens after a trance-induced sleep of more than 100 years to find great changes in his native Boston. Society enjoys full employment and social harmony. The book attacks the 19th century industrialized American poverty and squalor. This novel sold half a million copies in the first few years after it was published and initiated political and social reforms. (Use as comparison piece to **UTOPIA** by Sir Thomas More.)

Bosse, Malcolm, **CAPTIVES OF TIME**, Delacorte, 1987. Set in medieval Europe, a young girl learns the skill of clockmaking. The story also touches on the rise of cities, change from rural to urban lifestyles, and the social breakdown. (High interest/easy reading)

Conroy, Jack, **THE DISINHERITED**, Penguin, 1982. Although the plot is a bit stereotyped, the novel is still a graphic document of the lives of workers during the early Depression years. It tells of the slow awakening of the hero-worker from social unawareness to militant class consciousness. (Can be compared to Gaskell's **MARY BARTON**, written about similar problems in England's industrial revolution 100 years earlier.)

Davis, Rebecca, **LIFE IN THE IRON MILLS**, Feminist Press, 1972. First printed in Atlantic Monthly in April, 1861, this short work is a vivid account of life in the iron mills in America. It records the working conditions and poverty of the blue collar worker. Harding begins the tale, "My story is very simple, only what I remember of the life of one of these men, a furnace tender in one of Kirby and John's rolling mills, Hugh Wolfe." (Can be compared with Gaskell's **MARY BARTON**.)

Dickens, Charles, **GREAT EXPECTATIONS**, Bantam, 1982. This is the story of a young man's sudden rise to the upper class and his realization that genuine human values lie in hard work. (Adapted version: Globe Publishing).

Dickens, Charles, **HARD TIMES**, Bantam, 1981. In this novel of social protest motivated by the writer's feelings about contemporary British culture. Dickens loads the story with his dislike for the industrial conditions of England in the nineteenth century.

DiDonato, **CHRIST IN CONCRETE**, MacMillan, 1985. This is a tender, nostalgic story of Paul, a master bricklayer who must take on a man's job at a boy's wages. It was written in 1939 as a mostly autobiographical story.

Elkin, Stanley, **GEORGE MILLS**, Dutton, 1982. The novel covers 1000 years of history as it follows the careers of laborers, all named George Mills. It begins with an eleventh-century stableboy and ends with a furniture mover.

Galan, Fernando J., **ONE SUMMER**, Cambridge, 1983. A 20-year old who wants to become a social worker works as a drug counselor in New York City. (High interest/easy reading.)

Gaskell, Elizabeth, **MARY BARTON**, Penguin, 1975. Set in Victorian England, this is the story of Mary and John Barton, father and daughter, residents of Manchester, England, during the great depression of 1839. Novel shows the need for social reform in the struggle of the working class vs. the managers.

Hannibal, Edward, **CHOCOLATE DAYS, POPSICLE WEEKS**, Houghton Mifflin, 1970. John Fitzpatrick is a supervisor in a popsicle factory while working his way through college. He becomes successful as he pursues the "American dream." The novel won the Houghton Mifflin Fellowship.

Herbert, Ernest, **DOGS OF MARCH**, Penguin, 1980. This contemporary novel tells the story of New Hampshire family members employed as mill workers.

James, Stuart, **THE FIREFIGHTER**, Scholastic, 1979. This is the story of a young man who always wanted to be a fireman. He accomplishes his goal and becomes a hero in the process. (High interest/easy reading).

Kesey, Ken, **SOMETIMES A GREAT NOTION**, Viking, 1964. Set in a small Oregon logging town, Hank and his elderly father own a logging business. The union members and the town are constantly throwing roadblocks in their way.

More, Sir Thomas, **UTOPIA**, Penguin, 1965. More points out the social and economic evils of 16th century Europe. He describes an island kingdom with the perfect division of labor and absolute sharing of products.

Phelps, Elizabeth Stuart, **THE SILENT PARTNER**, The Feminist Press, 1983. Originally published in 1871, this is the story of two young women of different social classes in a mill town in Massachusetts. It records the living conditions of textile workers and the social and political situation of the times. (Can be compared with Harding's **LIFE IN THE IRON MILLS**.)

Reiff, Tana, **A PLACE FOR EVERYONE**, Pitman, 1979. A young girl who works in a sewing factory realizes she must learn to read in order to succeed and be happy. (High interest/easy reading).

Saint Exupery, Antoine de, **WIND, SAND AND STARS**, Translated by Lewis Galantiere. Reynal, 1939. This story is a tribute to modern technology and humanity. The author writes beautifully of flying and his love for his vocation.

Settle, Mary Lee, **THE SCAPEGOAT**, Random House, 1980. Set in early 20th century, the story tells of lives of workers in a West Virginia mining town.

Sinclair, Upton, **THE JUNGLE**, Penguin, 1985. An American classic set in the meat packing industry, this angry book rails against the inhumane conditions of the workplace toward the immigrant workers.

Steinbeck, John, **THE GRAPES OF WRATH**, Penguin, 1976 (excerpts.) The novel is an account of the predicament of migrant workers in the 30's. It portrays vivicly the Dust Bowl era when men, women, and their families were forced off the land, away from the agrarian society.

Waller, Leslie, **OVERDRIVE**, Holt, 1967. This is a story of a teenager who would drop school except for his shop class which he loves. (High interest/easy reading.)

Ward, Robert, **RED BAKER**, Simon and Schuster, 1986. This story of Baltimore steelworkers who lose their jobs when a mill closes down concentrates on the destructive effects of unemployment.

NON-FICTION

Arlen, Michael, **THIRTY SECONDS**, Farrar, 1980. This is a humorous story of the foolishness that passes for advertising. The book first appeared as a series in the **NEW YORKER.**

Bird, Caroline, **ENTERPRISING WOMEN**, Norton, 1976. The author gives biographies of 24 women who did various jobs such as running iron mills or inventing innovative product lines.

Boas, Max, and Steve Chain, **BIG MAC, THE UNAUTHORIZED STORY OF McDONALD'S**, Dutton, 1976. This is a satirical and factual study of the growth of McDonald's hamburger chain founded by Ray Kroc.

Byerly, Victoria, **HARD TIMES COTTON MILL GIRLS: PERSONAL HISTORIES OF WOMANHOOD AND POVERTY IN THE SOUTH**, Cornell University Press, 1986. Twenty contemporary women tell of their lives and work in the mill towns of North Carolina. The book is organized by themes and is a valuable primary source on working conditions in the South.

Caldwell, Erskine and Margaret Bourke White, **YOU HAVE SEEN THEIR FACES**, Modern Age Books, 1937. A pictorial commentary of life and work in the agricultural South during the 20's and 30's. Good reference book; compare to today's agricultural scene. Use in conjunction with **GRAPES OF WRATH.**

Colombo, Gary, et al, **REREADING AMERICA**, St. Martin's, 1989, Chapter 7, "How Work Shapes a Worker." This text was designed to stimulate thinking for essay writers, freshman/college level. "Work" essays include an interview by Studs Terkel, Erich Fromm's "Working in an Alienated Society," and Douglas Harper's study of Willie, a backwoods mechanic.

Foner, Philip S., **THE FACTORY GIRLS: A COLLECTION OF WRITINGS ON LIFE AND STRUGGLES IN NEW ENGLAND FACTORIES OF THE 1840'S**, University of Illinois Press, 1977. These are the stories of working women and the conditions of early American factories.

Greenwood, Annie Pike, **WE SAGEBRUSH FOLK**, Appleton Century Co., Inc., 1934. This is a personal diary of fifteen years on a homestead near Jerome, Idaho, as a teacher in a one room schoolhouse. (Use excerpts.)

Hanson, Sam, **HARD TIMES IN IDAHO BETWEEN THE GREAT WARS**, Idaho State University Press, 1985. These personal narratives detail the lives of Idaho residents during the Depression. Chapters include "Odd Jobs During Hard Times" and "Depression Era Sheep Herder."

Hartog, Jan de, **A SAILOR'S LIFE**, Harper, 1956. This is a collection of essays about every aspect of a sailor's life and many of the different jobs sailors perform. The author is honest and funny.

Hiley, Michael, **VICTORIAN WORKING WOMEN: PORTRAITS FROM LIFE**, David R. Godine, 1979. The book contains photos and sketches of working women in the mid 1900"s in England. It is based on the diaries of Arthur Munby who recorded his observations and interviews with working women of Victorian England and Wales. The author includes pictures and excerpts from the diaries in the second section.

Holcombe, Lee, **VICTORIAN LADIES AT WORK**, Archon Books, 1973. The book is a study of the changing role and status of women in the mid-19th century from the woman-of-leisure to the working class woman. It is organized by professions: teachers, nurses, shop workers, clerks, and civil servants. (Use excerpts.)

Kesey, Ken, **SOMETIMES A GREAT NOTION**, Viking, 1964. Set in a small Oregon logging town, the story tells of Hank and his elderly father who own a logging business. The town and the union are constantly throwing roadblocks in their way.

Kimbrough, Emily, **THROUGH CHARLEY'S DOOR**, Harper, 1952. Charley was the doorman at Marshall Field's Department Store. This is the story of an upper middle class girl who chooses a career in retail.

Kornbluh, **REBEL VOICES: AN IWW ANTHOLOGY**, "Joe Hill: Wobbly Bard," University of Michigan Press, 1964. This is the story of Joe Hill, his work to organize the miners, his trial and sentencing.

Levy, Jacques, **CESAR CHAVEZ: THE AUTOBIOGRAPHY OF LA CAUSA**, Norton, 1975. This is the story of the life and work of Cesar Chavez as told through interviews. It details his early live and his vision to gain economic power for the migrant laborer.

Magnuson, Richard, **COEUR D'ALENE DIARY**, Metropolitan Press, 1968. This is the story of the beginnings of the rich mining district of North Idaho. It includes tales of the early missionaries and miners from the 1840's through the 1880's.

Mostert, Noel, **SUPERSHIP**, Knopf, 1974. This is a study of the sea, ships, and the sailors in the super-tanker industry.

Nolan, Dean, and Fred Thompson, "**JOE HILL: IWW SONGWRITER**," Chicago IWW Press, 1979. This amphlet is a short history of organizer and songwriter, Joe Hill, and includes the music and words to his songs.

Parton, Mary Field, ed., **THE AUTOBIOGRAPHY OF MOTHER JONES**, Charles H. Kerr, 1925. Mother Jones was "one of the most forceful and picturesque figures of the American Labor Movement," according to Clarence Darrow who wrote the introduction to this book. This is an account of her crusade to improve working conditions in America's coal mining industry in the early 1900's.

Sandburg, Carl, **ALWAYS THE YOUNG STRANGERS**, Chapter 11 "Learning a Trade," Harcourt, Brace, Jovanovich, 1953. In personal narrative form, Sandburg tells the adventures of his first jobs.

Schank, Robert, **TEN THOUSAND WORKING DAYS**, MIT, 1978. The book includes stories of the author's days on the job in different areas: plumter, coal miner, farm hand, machinist, union official from the early 1930 until the present.

Seed, Suzanne, **SATURDAY'S CHILD**, J. Philip O'Hara, Inc., 1973. The book is written from interviews with 36 women who talk about how they discovered their chosen fields and what special abilities they have developed. Included are such occupations as sportswriter, carpenter, policewoman, florist, cab sdriver, telephone repairwoman, and illustrator.

Shook, Robert, **THE ENTREPRENEURS: TWELVE WHO TOOK RISKS AND SUCCEEDED**, Harper, 1980. This is a study of twelve contemporary business leaders who started extremely successful companies.

Smith, Gibbs M. **JOE HILL**, University of Utah Press, 1969. Joe Hill was an IWW labor organizer and song writer who was executed in Utah in 1915. The book tells of his life and struggles on behalf of the working people especially in the West. The book's appendix includes the songs written by Joe Hill.

Terkel, Studs, **HARD TIMES**, Pantheon, 1970. (Also on cassette). This is an oral history of the lives of average working persons during the Depression across America.

Terkel, Studs, **WORKING**, Random House, 1974. In interviews, people in different occupations talk about what they do all day and how they feel about what they do.

Terkel, Studs, **AMERICAN DREAMS, LOST AND FOUND**, Pantheon, 1980. These interviews are an account of workers and their experiences with the American dream.

Vecsey, George, **ONE SUNSET A WEEK: THE STORY OF A COAL MINER**, Saturday Review Press, 1974. The author goes to Appalachia to cover a strike. He meets a veteran coal miner who was foreman for 36 years, but after he is laid off, becomes bitter about the hazards of the profession.

Whyte, William, **THE ORGANIZATION MAN**, Simon and Schuster, 1956. This book outlines the attitudes of workers who have spiritually and physically taken "the vows of organization life."

DRAMA

Coxe, Louis O., and Robert Chapman, **BILLY BUDD**, Dramatists Play Service, 1951. Billy Budd is a pleasant sailor who breaks maritime law and must accept the death penalty. The theme is the conflict of humanity versus complete obedience to the law.

Glaspell, Susan, **TRIFLES, in WOMEN IN LITERATURE**, Prentice Hall, 1988. In this 1916 play about "men's" and "women's" work, the author deals with society's expectations of the kinds of work women should perform and the system of male authority.

Guare, John, **MUZEEKA**, Dramatists Play Service, 1967. A middle-class man has invented piped-in music. In this satire he must live with his conscience for inflicting this bland music on America.

Livings, Henry, **EH?**, Dramatists Play Service, 1965. This play is set in a factory boiler room. It details the plight of a tough individual caught in a dehumanized, computerized modern industry.

Marchant, William, **THE DESK SET**, French Publishers, 1956. The "desk set" is a group of women in the reference department of a television network. Bunny Watson finds herself competing with the new "electronic brains" in the office.

McGuinness, Frank, **FACTORY GIRLS**, Wolfhound Press, 1982. Set in the early part of this century, this Irish play deals with industrial working conditions.

Miller, Arthur, **ALL MY SONS**, Dramatists Play Service, 1947. The story follows the fortunes of the Keller and deever families during World War II.

Miller, Arthur, **DEATH OF A SALESMAN**, Dramatists Play Service, 1948. This is a tragic story of a salesman's last days as he seeks to find out where and how he has failed to win success and happiness with his family and business associates.

O'Neill, Eugene, THE HAIRY APE, Dramatists Play Service, 1922. This story of a stoker who is described as a "filthy beast." He begins to feel he does not belong to the human family.

Rice, THE ADDING MACHINE, French Publishers, 1923. This is the life history of Mr. Zero, a cog in a vast machine of modern business.

Teichmann, Howard, and George S. Kaufman, THE SOLID GOLD CADILLAC, Dramatists Play Service, 1953. The board of directors of General Products interacts with a little old lady who owns $10 worth of stock.

Wallach, Ira, THE ABSENCE OF A CELLO, Dramatists Play Service, 1965. In this comedy, a brilliant but starving scientist finally gets a job with a large corporation.

Wilde, Percival, HOUR OF TRUTH, Baker Publishers, 1916. An honest bank cashier is offered a large bribe by the dishonest president of the bank and must decide whether to accept the boss' offer.

POETRY

Aiken, Conrad, "The Road," AMERICAN POETRY, Harper and Row, 1965.

Armour, Richard, "Workers Earn It: Money," FAMILY ALBUM OF FAVORITE POEMS, 1959.

Bersohn, Robert, "The Dignity of Labor," POETRY FOR PLEASURE, Doubleday, 1960.

Carter, Jared, "At the Sign Painter's," FIFTY YEARS OF AMERICAN POETRY, Abrams, 1984.

Collins, Mary G., "Women at Munitions Making," SCARS UPON MY HEART, Virago Press, 1981.

Daniels, Jim, "Short Order Cook," REREADING WORK, Colombo, St. Martin's, 1989, p. 517.

Daniels, Jim, PLACES EVERYONE, University of Wisconsin, 1985. This anthology of poems deals with the life of the worker both on the job and at home after work. The collection won the Brittingham Prize for Poetry. Selections include:

"5000 Apply for 100 Jobs"
"Wheels"
"After Work"
"Anita, a New Hire on the Line"
"Factory Jungle"
"Hard Times in the Motor City"
"My Father Worked Late"
"Blood Flows Through Steel"

Eagleton, Sandra, WOMEN IN LITERATURE, Prentice-Hall, 1988. Section III, entitled "Women and Work," has a subsection, "Poetry About Women and Work." It includes the following poems:

Broumas, Olga, "Cinderella."
Kizer, Carolyn, "Pro Femina."
Page, P.K, "Typists."
Replansky, Naomi, "A Good Day's Work."
Halley, Anne, "Housewife's Letter."
Nelson, Alice Dunbar, "I Sit and Sew."
Piercy, Marge, "To Be of Use."

Evans, H.A.C., "The Liftman," POEMS ONE LINE AND LONGER, Grossman, 1963.

Frost, Robert, "Death of the Hired Man" Frost, Robert, "Out, Out..."

Gilman, Charlotte, "To Labor," POEMS THAT LIVE FOREVER, Doubleday, 1965.

Heaney, Seamus, "Digging," BOOK OF IRISH VERSE, MacMillan, 1974.

Hey, Phillip, "Old Man Working Concrete," FIFTY CONTEMPORARY POETS, David McKay, 1977.

Hill, Joe, "Preacher and the Slave," FOLKSINGER'S WORD BOOK, Oak Publications, 1973.

Hoffman, Nancy, and Florence Howe, WOMEN WORKING: AN ANTHOLOGY OF STORIES AND POEMS, McGraw Hill, 1979. Included among the poetry about working women:

Crosby, Ranice Henderson, "Waitresses."
Reznikoff, Charles, "Amelia."
Walker, Margaret, "Lineage."
Pedrick, Jean, "Hats."
Voigt, Ellen Bryant, "Farm Wife."
Walker, Alice, "Women."

Holzapfel, Rudi, "The Employer," DEVIL'S BOOK OF VERSE, Dodd, Mead, 1983.

Hughes, Langston, "Florida Road Workers," MODERN AMERICAN POETRY, Harcourt Brace, 1962.

Ignatow, David, "The Paper Cutter," CRAZY TO BE ALIVE IN SUCH A STRANGE WORLD, Criterion, 1956.

Lowell, James Russell, "Work," POEMS FOR SEASONS AND CELEBRATIONS, World Publishers, 1961.

MacDonald, George, "The Carpenter," TREASURY OF RELIGIOUS VERSE, Revell, 1962.

MacLeish, Archibald, "The Burying Ground by the Ties," MODERN AMERICAN POETRY, Harcourt Brace Jovanovich, 1962.

Markham, Edwin, "The Man with the Hoe," BEST LOVED POEMS OF THE AMERICAN PEOPLE, Doubleday, 1936.

Markham, Edwin, "Behold, O World, the Toiling Man," POEMS FOR GREAT DAYS, Abingdon-Coke, 1948.

Markham, Edwin, "The Forgotten Man," POEMS THAT LIVE FOREVER, Doubleday, 1965.

Massey, Gerald, "The Worker," EVERYMAN'S BOOK OF VICTORIAN VERSE, Dent, 1982.

Milnes, Richard M., "England and America, 1863," EVERYMAN'S BOOK OF VICTORIAN VERSE, Dent, 1982.

Murton, Jesse W., "Song of the Builders," NEW OXFORD BOOK OF EIGHTEENTH CENTURY VERSE, Oxford University Press, 1984.

Plotz, Helen, ed., SATURDAY'S CHILDREN: POEMS OF WORK, Greenwillow Books, 1982. This anthology is divided into poems of rural occupations, poems of women's work, poems of child labor and industrial work, and poems of the frustration or satisfaction work brings. (Good choice for class set.)

Riley, James Whitcomb, "The Raggedy Man," FAVORITE POEMS, OLD AND NEW, Doubleday, 1957.

Rivers, Conrad K., "The Train Runs Late to Harlem, I AM THE DARKER BROTHER, Macmillan, 1968.

Robinson, Edward Arlington, "Richard Cory," **SELECTED POEMS OF EDWIN ARLINGTON ROBINSON**, Collier, 1965.

Sandburg, Carl, **THE PEOPLE, YES**, in **THE COMPLETE POEMS OF CARL SANDBURG**, Harcourt, Brace, Jovanovich, 1970. Poems include:

"Chicago"
"Ice Handler"
"Mag"
"Prairie"
"Work Gangs"
"Dynamiter"
"I Am the People, the Mob"
"The Mayor of Gary"
"Smoke and Steel"

Thomas, Richard, "The Worker," **POETRY OF BLACK AMERICA**, Harper and Row, 1973.

Thoreau, Henry D. "Inspiration," **AMERICAN POETRY AND PROSE**, Houghton, Mifflin, 1970.

Toomer, Jean, "Reapers," **THE BLACK POETS**, Bantam, 1957.

Unknown, "Way Out in Idaho," **AMERICAN FOLK POETRY**, Little Brown, 1974.

Warner, Sylvia, "John Bird, A Laborer Lies Here," **MODERN BRITISH POETRY**, Harcourt Brace, 1962.

Warr, Bertram, "Working Class," **NEW OXFORD BOOK OF CANADIAN VERSE IN ENGLISH**, Oxford, 1982.

Watts, Mabel, "The Riveter," **RANDOM HOUSE BOOK OF POETRY FOR CHILDREN**, Random House, 1983.

Whitman, Walt, "I Hear America Singing," **AMERICA FOREVER NEW**, Crowell, 1968.

Zaturenska, Marya, "Song of a Factory Girl," **HOME BOOK OF MODERN VERSE**, Henry Holt, 1953.

SHORT STORIES

Calvino, Italo, **MARCOVALDO**, Harcourt, Brace, Jovanovich, 1963. The central figure in this collection is Marcovaldo, an unskilled laborer at a factory. The stories take place in an industrial city of northern Italy in the 1950's and 60's.

Conroy, Jack, **THE WEED KING AND OTHER STORIES**, Lawrence Hill & Co., 1985. Chapter IV , "Tales of Workers," includes nine short stories about working people during the 30's. The characters are drawn from real characters Conroy met during this time. Short and easy to read, the stories portray the personal side of the Great Depression.

Eagleton, Sandra, **WOMEN IN LITERATURE:** Life Stages Through Stories, Poems, and Plays, Prentice-Hall, 1988. The third section, "Women and Work," includes short stories, poetry, and drama dealing with the identity of a woman as related to her home work or outside job. (Possible class-set choice.) Short stories included are:

Zora Neale Hurston, "Sweat"
Doris Lessing, "One Off the Short List"
Sarah Orne Jewett, "Tom's Husband"
Anzia Yezierska, "America and I"

Gaskell, Elizabeth, "Lizzie Leigh," LIZZIE LEIGH AND OTHER TALES, New World Books, 1972. This is the story of a young girl who must work to support her alcoholic father.

Gaskell, Elizabeth, "Hand and Heart," LIZZIE LEIGH AND OTHER TALES, New World Books, 1972. Set in the industrial Victorian period, this is the story of John who works as a child laborer in a cotton factory.

Hoffman, Nancy, and Howe, Florence, WOMEN WORKING, McGraw Hill, 1979. This anthology of short stories and poems is divided into chapters on Oppressive Work, Satisfying Work, Family Work, and Transforming Work. The introduction contains a definition and brief history of women's work, and recurrent themes in women's work. Includes works by Dorothy Canfield Fisher, Marge Piercy, August Strindberg, Willa Cather, Charles Reznikoff, and others. (Possible class-set choice.)

Narayan, R. K., "Forty-five a Month," MALGUDI DAYS, Viking Press, 1982. Venkat Rao wants desperately to please his daughter by taking her to a movie. He is caught between his work and his family.

O'Rourke, William, Ed., ON THE JOB: Fiction About Work by Contemporary American Writers, Random House, 1977. This anthology "presents the way we work in America as seen through the eyes of some of our foremost contemporary fiction writers." The collection includes stories by Ken Kesey, Joyce Carol Oates, Grace Paley, Charles Bukowski, as well as:

> "The Death of Me" by Bernard Malamud, the story of a tailor shop owner who suffers because he can do nothing to stop the bickering of his employees.
>
> "A & P" by John Updike, the story of a checker in a grocery store who tries to prove a point by quitting his job.
>
> "Timmy" by Richard Elman, the story of a black woman whose boss steps over the invisible line between employer and employee.

Sillitoe, Alan, "Ear to the Ground," THE SECOND CHANCE, Simon and Schuster, 1981. This is the story of an unemployed van driver who has become embittered toward society.

Stead, Christina, "The Azhdanov Tailors," OCEAN OF STORY, Viking Press, 1985. The story tells the trials of Jan Kalojan who organizes the Yiddish-speaking tailors in Poland.

Thurber, James, "The Catbird Seat." THURBER CARNIVAL, Harper Brothers, 1945. An office is turned upside-down by the boss' new assistant until a clever worker devises an ingenious way to have her fired.

Tolstoy, Leo, "How Much Land Does A Man Need?" TREASURY OF RUSSIAN LITERATURE, Bernard G. Guerney, ed., Vanguard, 1943. Set in an agricultural area, this is the story of a hardworking farmer whose greed for land corrupts his life and his spirit.

Vonnegut, Kurt, "Harrison Bergeron," WELCOME TO THE MONKEY HOUSE. Dell, 1970. The year is 2081 and everyone is equal. By law, there are no smarter or better people because the government has "handicapped" everyone who is above average in any way. Young Harrison Bergeron escapes his "handicaps" for a brief moment. The story is a satire on the themes of discrimination and equal opportunity.

ROUGH DRAFT

Not For Quotation

APPLIED COMMUNICATIONS

IMPLEMENTATION GUIDE

1989

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INTRODUCTION

Twentieth century technology and in particular those technological advances of this decade, calls for a close examination of the language arts skills currently being taught in English classrooms. More important than the skill areas being addressed in school curriculum today is the assimilation factor and subsequent use of language arts material designed to enhance communication skills. Ultimately, educators must respond to this question: are the communication skill areas as stressed in a standard curriculum practical enough to sustain the high school graduate in the world of work today?

The demands on individuals in the work force today are as diverse as the people themselves. Current twentieth century demands call for a new type of command as the economic climate shifts from an agrarian to an information based economy. Jobs once handled by a single farm or small business family are now relegated to others on a multitude of levels. Today's world calls for people skilled in the art of communication, people who can give, receive, and interpret information delivered in various ways. People must be able to read, write, speak, and listen to directions as well as to follow them. In an information based workplace these skills are used daily in all phases of communication. It is essential that today's students be skilled in those areas that will enable them to phase into a high-tec working environment where each person communicates to another the information necessary to complete a job. How then can educators today enhance the language arts skills needed to meet tomorrow's demands in the workplace?

Vocational training once thought of as a separate segment of education has been the focus recently of an integrated new program called Applied Communications,introduced in nineteen test sites throughout Oregon in the 1988-89 school year. Its purpose: to teach English skills in a vocational setting by introducing students to a modular learning experience based on skill development applicable to the workplace. Funded and developed by a consortium of state and provincial education agencies, in association with the Agency for Instructional Technology, this fifteen module set of materials focuses on development of the following: Communicating in the workplace; Gathering and Using Information in the workplace; Using Problem-Solving Strategies; Starting a New Job; Communicating with Co-Workers; Participating in Groups; Following and Giving Directions;Communicating With Supervisors; Presenting Your Point of View; Communicating With Clients and Customers; Making and Responding to Requests; Communicating to Solve Interpersonal Conflicts; Evaluating Performance; Upgrading, Retraining, and Changing Jobs, and Improving the Quality of Communication. Each module consists of ten 40 to 55 minute lessons. Any module can be used singly and in any order to broaden existing skill areas as they apply to communication in the workplace. A variety of learning experiences are offered in each module, culminating in the refinement of overall communication techniques necessary for competition in today's world.

CREDIT

Whenever new materials and course ideas alter existing programs, the question of credit towards graduation surfaces. Integrating the applied communications materials into existing courses will not affect the required number of language arts credits needed for graduation. However, if a district chooses to offer the applied communication materials in a single course, the Department of education recommends that it be no more than one credit of a four credit or a three and one half credit requirement. If the district requires only three credits in English, then the recommendation is that Applied Communications should be one semester of that requirement. However, the final decision is a local one.

If districts are integrating the Applied Communication materials with an existing course (usually vocational) and want to give students partial credit in each, they they must be sure that the hourly requirement for seat time for credit is met. The current requirement is that **130 clock hours equals one credit**, so **one half credit requires 65 clock hours of instruction** and **one quarter credit equals 32.5 hours.**

TEXTBOOK ADOPTION

Oregon is a state textbook adoption state. As such, it requires districts to select textbooks "for each grade and subject field from the multiple choice approved list" selected by the State Textbook Commission in compliance with state law (ORS 337.120.) At the time of the last adoption, the Applied Communications materials were not yet developed so they could not be submitted for consideration. However, districts wishing to use them in place of materials from the adopted list may submit a request for approval to use alternate materials (independent textbook adoption.) (ORS 337.141.)

Not all instructional settings require an independent textbook adoption. The following situations **do not:**

*Current materials are being used as a supplement to an established English or Business Communication course and in addition to the regularly adopted text which is the major instructional vehicle for the class.

*The course is offered as one of several options or selective courses such as science fiction, creative writing, mass media, or comparable elective topics.

*Current materials are being used in a course designed for a special segment of students, taking the place of that group's regular English course (ie: all the students in the course are part of a vocational program.)

The following instructional settings **would require** an independent textbook adoption:

*Current materials are to be used for the majority of the student population at a given grade level and/or in lieu of the regular course (ie: all seniors in English 12.)

*Currently used materials constitute the main instructional vehicle for the language and composition component of a class which receives English credit (ie: these will be integrated into the existing required Contemporary Composition course in place of a traditional textbook.).

Questions arising from the use of the Applied Communications materials will need to be addressed on an individual , case by case basis. Districts that have questions about whether to apply for an independent textbook adoption, should contact the Executive Secretary for the State Textbook Commission or the Standards Section at the Department of Education.

COMMON CURRICULUM GOALS

All English courses must teach toward the Common Curriculum Goals established by the State Department of Education.

A correlation of the Applied Communications materials with the English Language Arts Common Curriculum Goals on a module by module basis is included in Appendix A. Local districts will need to evaluate the extent to which these materials are being implemented in order to determine whether the correlation matches their instruction.

PLANNED COURSE STATEMENTS

Planned course statements for every high school course are required by Standard 581-22-316. If the Applied Communications materials are being integrated into an existing course, the planned course statement should be revised to reflect any changes in goals or use of materials. When the Applied Communications materials are going to be part of a newly created course, a new planned course statement should be written. See Appendix B for a model planned course statement. Individual districts however, will need to amend the model to match their instructional plan and format for planned course statements.

HIGHER EDUCATION REQUIREMENTS

The Oregon State System of Higher Education Colleges and Universities require all entering freshmen to have 4 years of college preparatory English. The Applied Communications materials have caused some concern in this area. Students should not be counseled into an English course that, because of supplementary materials, will not meet the college preparatory English requirement within the Oregon State College System.

In May, 1989, OSSHE issued a new set of criteria for determining whether a course meets the guidelines for college preparatory English: An English course in high school which is designated "college preparatory" demonstrates the characteristics explained below:

a. The course must contain a substantive amount of reading and writing.
b. The course content must include critical thinking

(interpreting, analyzing, and summarizing) and oral communication skills.

c. The instructional materials used must be at or beyond grade level.

d. The course may be certified by the College Board or by an accredited college as "college level work."

e. The course may integrate study skills and test-taking skills, but does not make these particular skills the primary focus of the course.

Courses which most likely will not meet the Oregon College Preparatory English requirements will show one or more of the following characteristics:

a. The course emphasis is on production or on activities such as newspaper and/or yearbook production, forensic competition, or theater production

b. The course instructional materials are below grade level.

c. The course may be remedial or developmental in nature.

d. The course content provides a minimal amount of reading and writing practice.

e. The course emphasizes study skills or test-taking skills rather than English language arts curriculum content.

Whether or not a course meets the criteria for a college preparatory class as outlined above, will need to be determined by individual buildings In general terms, a course must provide some supplementary reading and writing activities in order to truly provide "substantive amounts of reading and writing."

ASSESSMENT OF STUDENT PROGRESS

Oregon Standards for Public Elementary and Secondary School require teachers to monitor student learning and to adapt instruction to meet the progress needs of individual students (OAR 581-22-602.) When a new approach, such as the Applied Communication concept, is introduced into an existing course some confusion may arise about the best way to monitor student achievement.

The Applied Communications materials and activities can easily be used in "performance assessment" since they lend themselves readily to a variety of measurement strategies. The materials in each module includes checklists and other evaluative tools which may be used by teachers or by students as either peer or self evaluation instruments.

In addition to the strategies developed with the Applied Communications materials the Department of Education has material that can be used to assess student achievement in such areas as writing, speaking, and listening and this can be used to evaluate progress on activities within the various Applied Communications modules. Examples from the modules and some alternate strategies are included in Appendix C.

WRITING ACTIVITIES

The Applied Communications materials do not require students to write at length. Those writing assignments called for tend to be short responses, paragraphs, or memos. To alleviate criticism about the materials and to eliminate the problem, teachers are asked to incorporate some of their own writing assignments such as journals or learning logs. This daily type of recording fits in well with the concept of Applied Communications materials. Some teachers have included a research paper linked to a prospective career as an extended writing assignment within a module. Examples of a variety of writing assignments taken from the 1988-89 pilot sites is contained in Appendix D.

APPLIED COMMUNICATIONS AND THE VOCATIONAL PROGRAM APPROVAL PROCESS

The Applied Communications materials may be approved as part of a vocational program if the following conditions are met:

1) The course is a support course to the vocational program and is offered through the Division of vocational Technical Education. It may be jointly offered with the English/Language Arts, Math, or Science Divisions.

2) There is demonstrated cooperation between the vocational teacher and the English/Language Arts teachers; the course is an integral part of the vocational program; the number of hours for instruction in the Applied subject is documented for academic/vocational credit purposes. This is subject to annual review by the Oregon Department of Education.

3) the Vocational Department chair and Advisory committee sign the approval request stating that the course is relevant to the vocational program.

4)The planned course statement specified relevance to the vocational program for which it is approved.

PLANNED COURSE STATEMENT

Department: Language Arts
Course Title: Communication Skills
Length of Course: full year
Credit: 1 credit
Grade Level: 11-12

****

COURSE DESCRIPTION: Communications Skills is a year-long course designed for juniors and seniors who are functioning near or at grade-level and who have vocational interests and aptitudes, and who may or may not plan on post-secondary training or education. Students will earn English cr\edit. The materials and activities are directly related to communication in business/marketing, health, home economics, agriculture, and technical, trade, and industrial occupations. Teaching strategies focus on student success in the workplace.

MATERIALS: *Applied Communication Worktext*, Agency for Instructional Technology, 1988.

Are these materials district adopted? yes__X___ No______

Course Goals: The goals designed for this course meet the Oregon State Department of Education's Common Curriculum Goals. Communication Skills goals include the following:

1) The student will be able to use problem-solving strategies.
2) The student will be able to communicate with co-workers.
3) The student will be able to participate in a variety of group activites.
4) The student will be able to follow and give directions.
5) The student will know strategies for communicating with co-workers.
6) The student will know strategies for communicating with supervisors.
7) The student will be able to present a point of view.
8) The student will be able to apply listening strategies.
9) The student will know strategies for communicating with clients and customers.
10) The student will be able to apply strategies for solving interpersonal conflicts.

Implementation of Applied Communications Materials:

There are 15 modules included in the Applied Communications materials. Each consists of ten 40-55 minute lessons which can be used singly-in any order- to broaden existing communication skills. All

15 modules constitutes a year long course. A variety of learning activities is suggested in each module. A comprehensive instructor's kit is included with each module. Each module includes two video programs:one to introduce the module and one to review its content. Video content is conducive to additional simulations of the workplace. Teachers can supplement the content of the Communication Skills Course with a variety of outside materials which include: report and research writing; field trips; guest speakers , and additional video tape sessions with students and members of the business community. An annotated bibliography is also included for the course ,offering a variety of reading experiences -nonfiction, biography, poetry, periodicals-all of which apply to the world of work.

Titles of the Applied Communication Modules:
Communicating in the Workplace
Gathering and Using Information in the Workplace
Using Problem-Solving Strategies
Starting a New Job
Communicating with Co-Workers
Participating in Groups
Following and Giving Directions
Communicating with Supervisors
Presenting your point of View
Communicating with Clients and Customers
Making and Responding to Requests
Communicating to Solve Interpersonal Conflicts
Evaluating Performance
Upgrading, Retraining, and Changing Jobs
Improving the Quality of Communication

APPLIED COMMUNICATIONS MATERIALS CASE STUDIES

The Applied Communications materials were introduced into existing English courses, as well as being used as the basis for a new course, in nineteen test sites in Oregon during the 1988-89 school year. Each site submitted a case study bearing the name of the school, name of the project director, name of the teacher(s), and the subject area(s) involved, school population, demographics of the particular district, and a description of the project implementation model. Each case study included overall reactions to the course and materials by teachers and by students, and concluded with recommendations, by the majority of test sites, for the future use of the Applied Communications materials.

Listed below are the summarized versions of each of the test site case studies:

School - Baker High School

Project Director - Nick Mausen

Teachers/Subject Areas: Tonita Croghan/English and Scott Toll/ Mechanics.

School population - 579. Grades 9-12.
Demographics of District: Baker High School is located in Eastern Oregon. A rural community, it serves a majority population of white students, 70% of whom plan some form of post high school training.

Project Model:
Baker High School implemented the materials in a Mechanices II class of junior and senior students and in a basic skills English class of primarily juniors. Two to four teaching modules were planned for review but due to a building fire, the original plan was not fulfilled. One module was used in the English class and the mechanics class viewed seven of the video tapes followed by discussion.

Student reaction to course:

Students reacted enthusiastically to the materials in the beginning but found the lessons repetitious and seemed to lose interest. The videos were enjoyed however, and some good discussion ensued.

Teacher reaction to materials:
Materials seemed urban in orientation and the students' rural backgrounds left them unable to identify with the simulations. Due to the limited resources of a small community, some assignments could not be completed. The difficulty level of the assignments was inconsistent.

Recommendations:
Both the visual components and the written materials need to include more skill oriented examples and projects. Most of the work seemed service directed rather than skill oriented.

School - Centennial High School

Project Director: Ruth Anne Hansen

Teachers/Subject Areas: Ruth Ann Hansen, English

Population of District: Approximately 5,000 students, K-12.

Demographics of District: Centennial School District is comprised of six elementary schools, one middle school, and one high school. It is located in suburban Portland.

Project Model:

The Applied Communications materials were used as a one semester English class for juniors or seniors enrolled in year 2 of a vocational program. The English teacher worked cooperatively with the vocational teachers, which proved a strength of this project.

Student reaction to course:

The materials proved successful for those students who previously had encountered difficulty in their English class. Students were able to relate the materials to their present jobs. For the majority of students the slower pace was positive. However, the more able students found the pace slow and the materials too easy. Some impatience resulted.

Teacher reaction to materials:

Though repetitious.in nature, the Applied Communications materials have a good format and include good activities. The difficulty level is however, uneven and the directions are not always clear. The video tapes in all cases were good springboards for discussions.

Recommendations:

In order for students to see a direct application to the world of work in the Applied Communications materials, they should be enrolled in the second year of a vocational class. The teacher using these materials should be from the English Department. The format of the materials should be varied since repetition generated a loss of interest among the students. Supplementary activities for skills would enhance the materials.

School: Crook County

Project Director: Bennie Hays

Teachers/Subject Areas: English B-Terry Hild; English 9-10, Peg Kasberger; Home Ec., Shan Wattenburger; Business, Sybil Stafford; Ag, Dan

Russ.

Population of school: 755

Demographics of District: Crook County High School is the only high school in the county. Students commute up to 60 miles daily to attend. Lumber mills, crops and livestock farms and ranches serve as the major economic means. Prineville's nearest neighboring town is 18 miles away.

Project Model:

All Applied Communications materials were integrated into four existing state approved vocational programs: Metals, Industrial Mechanics, Agriculture and Business. In addition to these classes two non-approved vocational programs _ Home Economics and Senior Life Skills/Career Education- and one existing English program/class with the Senior English teacher were also included. A total of seven teachers cooperated on effective lesson planning during a common planning period. Each vocational teacher then followed up the training offered in the Senior English B class by integrating Applied Communications training modules within their classrooms. Approximately 864 student contact hours were involved.

Student reaction to course:

Those lessons that were deemed most useful worked well with students and they fit into the existing curriculum. The reading level of the Applied Communications materials is grade 10 so materials need to be adapted to meet the needs of lower level students.

Teacher reaction to materials:

All teachers involved in the implementation of the Applied Communications materials evaluated their use separately:

Terry Hild, English: Teacher used the workbooks as guides and expanded the unit by creating additional worksheets, making the unit more adaptable for grade level. To supplement suggested activities, teacher brought in outside speaker when appropriate.

Shan Wattenburger, Home Economics: Modules are used to supplement existing curriculum.

Sybil Stafford, Business: As supplement to the Applied Communications materials, the teacher developed community resource field trips. Module 4 worked well since some of the material had been covered and students were already familiar with the activities. They especially enjoyed the video portion. As supplementary material, students broke into groups and gathered information about jobs in the field they were interested in pursuing beyond high school.

Dan Russ, Vocational Agriculture: To the extent the modules were used and during one class period only, "no" improvement in student performance was noted. Teacher developed community resource field trips.

Chuck Cruikshank, Senior Life Skills, Career Education: Teacher developed community resource field trips.

Peggy Kasberger, English and Reading: Appropriate lessons were selected, fitting them into existing curriculum. Some adaptation was necessary since the Applied Communications materials are on a tenth grade reading level. Overall, lesson materials are good and there is enough to choose from for established curriculum.

Recommendations: Again, each teacher involved responded individually and to specific modules. Suggestions include: More accessibility of video materials through building media center; materials seem to be designed for the teacher with limited teaching experience in the subject areas covered. However, the materials are well written and can be useful to certain teachers. Some of the material is written at a difficult level and in some cases the lessons must be read to the class. The Senior Project was well done and well received. Overall, Applied Communications materials seem to provide a program that is designed for seniors. The materials are pertinent to their job search and at CCHS, these lessons should probably be geared to that age group.

School: Cottage Grove High School
Project Director: Judd Van Gorder
Teacher/Subject Area: Donna Long, Language Arts
Population of school: 560. Grades 10-12.
Demographics of District: Middle class mill town.

Project Model:
The Applied Communications materials were implemented as the curriculum base for a one semester course which carries one half English/Language Arts credit for graduation. The course is taken by about 90% on non-college bound seniors. A total of seventy students were involved in the course this year. The course was taught daily by a language arts teacher.

Student reaction to course:
Students were positive. They enjoyed the applicability of the material to their job situations, present and future. Some adjustment was necessay

for the terminology. Packet format however, lead to some boredom.

Teacher reaction to materials:
Teacher reaction was generally positive. Material was relevant and topics excellent. Some repetition between modules resulted in one negative general reaction. After their initial use, the teacher manuals seemed repetitious rather than helpful. All modules were not used but modules 4,7,8 had some weakness and less will be done with them in the future so that there is time to incorporate modules 10-12.

School: Madras Senior High School.
Project Director: L.H. Gilliland
Teacher/Subject Area: Barry Morrison, English.
Population of school: 609. Grades 9-12
Demographics of District: Madras High School is located in agricultural and lumber products country in Central Oregon. School population varies between 540 and 600 students between grades 9-12. Approximately thirty-six percent of the enrollment is Native American, eleven percent is Hispanic, and one percent of the enrollment is Asian. Five areas of vocational education are offered as electives: 1)Agriculture 2) Graphic Arts 3)Forestry 4) Metal Fabrication 5)Office Systems. All five areas have lead- in classes along with woodworking, small gas engines, and drafting.

Project Model:
Madras High School implemented the Applied Communications materials into a course called by the same name. Students, 25 in number, were hand

selected according to vocational interests. Enrollment was at the sophomore grade level and the class was designated to satisfy their English requirement. All students were given the option of withdrawing to a regular English class after viewing the introductory tape. None chose to do so. The class was taught in an English classroom which was used the rest of the day for tenth grade English; therefore, students felt that their new course was an integral part of the English curriculum. The class met for fifty-three minutes each day on a rotating schedule which drops every seventh class period. This resulted in a loss of approximately twenty-five class periods during the course of a traditional 175 day school year.

Student reaction to course:

Overall, students found the materials easy and lacking substance and yet, equally difficult and overwhelming at times. A general consensus indicated that students felt they did not have to work very hard.

Teacher reaction to materials:

Course content, which was satisfying an English requirement for graduation, was not difficult or comprehensive enough for a high school graduate. Writing assignments were minimal, consisting only of memos. This course did not challenge the participants in the same way that the regular sophomore course challenges them. The level of skills mastered here did not compare to those achieved in regular English.

Recommendations:

The Applied Communications materials should be used in a class of juniors or seniors. Sophomore students do not have enough experience to bring to the subject to perform effectively. The course should be incorporated into existing vocational classes and not taught as a stand-alone course. More legitimate writing activities should be built into the module.

School: Oregon State Penitentiary
Project Director: J.Ritter
Teachers/Subject Area: J. Ritter, J. VanDruesche, History and English.
Population of school: 280
Demographics of School: OSP is a maximum security institiution. There are 1800 adults inside the walls. ABE-GED Program. Twenty-three students completed the course.

Project Model:
The Applied Communications materials were used daily for one hour by two teachers. Not all of the material used was deemed suitable for adult lessons but the video materials were enjoyable and did provide a learning experience in the classroom. Some sections of the lessons were appropriate for use in an adult education setting.

Student reactions to course materials:
Some of the units were repetitive in nature but others were good.

Teacher reactions to course materials:
Some of the materials were repetitious; however,some sections in each unit were usable as individual lessons, supplementing other course work.
Recommendations: The Applied Communications curriculum is probably

more appropriate to the high school classroom than to adults functioning on a 9-12th grade level. It would probably work well for lower functioning adults or for learning disabled adult students.

School: Pacific High School, Port Orford-Langlois School District

Project Director: Lowell Chamberlin

Teacher(s)/Subject Area(s): Sue Rundberg, Home Economics; Earlyene Pritchard, English and Business; Astrid Battle, English and Special Ed.; Tim Flake, Career Developlment and Sociology.

Population of School: 122 students

Demographics of District: Pacific High School serves students from Port Orford and Langlois. These are small, rural communities supported by fishing, lumber, sheep ranching, and tourism.

Project Model:

Twelve students were selected for this project, six juniors and six seniors. Selection was based on their specific need for communication skill developlment. Low achievement and performance skills characterized this group as an alternative to a regular English class. Port Orford began using Modules 1,2 and continued in that order. The last four modules were not used.

Teacher reactions to materials: Not all modules lend themselves to the rural school setting. Students' limited backgrounds prohibit their drawing on readings and experiences. The success of the program seems to be related to the creative ability of the teacher rather than in the program modules themselves. There is limited field trip option in Port Orford.

Recommendations: Teacher selection for these materials is important. Modules will be selected for particular class settings. Some lessons are more valuable than others.

School(s): Salem-Keizer School District (includes five high schools, 9-12.)

Project Director: Gay Masters, Lalnguage Arts/Reading Coordinator.

Teacher(s)/Subject Areas:

McKay:	Lance Cooley, English
McNary:	Doug Stuivenga, English
North:	Don Christensen, English
South:	Elsie Ries, English
Sprague:	Leslie Partpart, English

Population of District: This five high school district has an enrollment of 7,211.2 students in grades 9-12.

Demographics of District: The five high schools involved in the pilot program are all urban schools serving both college prep needs and vocational needs of its students.

Project Model: The Applied Colmmunications materials, modules 1-7, were infused into an existing composition course for juniors, titled Junior Expository Writing. Each of the five teachers involved used the materials at his/her respective sites. Each instructor recorded successes and failures and collaborated on the best way to supplement and to implement the individual modules. Additional teacher resource materials were created as necessary. The group met monthly with the consulting teachers from other disciplines.

The Applied Communications materials will be used in the 89-90 school year as the basis for two new courses. The first seven modules will become a junior/senior semester course; modules 8-15 will become a senior semester course. Studdents must complete the first semester in order to be eligible for the second.

Since the materials were used in five sites at the discretion of the teacher involved, the reaction to materials and course that appear below is a summary of the experiences at North Salem High School. District - wide, the participating teachers brought ideas and ideas for supplementary materials to regularly scheduled meetings.

Student reaction to course:
Each module was evaluated individually, 1-8. Overall reactions include: Students showed an increasing interest and a desire to succeed; participation was almost 100%; few questioned the reason for doing a module; students were cooperative and enthusiastic; students wanted to get along with each other.

Recommendations:
Again, the comments below are taken from the North high teacher evaluation: Module 3, Using Problem Solving Strategies, was difficult to maintain for the two week suggested time period. Other approaches should be considered next time it is used. Simulated situations as in

module 6 do not seem to work as well as real-life interest so participation lacked in this module. Module 7 generally worked well but materials were not of high interest.

School: Roseburg Senior High School
Project Director: Bill Walker
Teacher(s)/Subject Area(s): Vocational and English
Population of School: 1425
Demographics of District: Roseburg is a small Southern Oregon community of approximately 18,000 and has a timber/lumber based economy.

Project Model:
The Applied Communications materials were used in a vocational setting for juniors and seniors one period a day. The program was team taught by a vocational teacher and an English teacher. The students could earn one-half to one credit, depending on enrollment of either one or two semesters. Forty students were involved in the program, males and females. The dropout rate at the end of the semester was significantly lower than the basic and standard English class.
Student reaction to course:
Annonymously written student responses were based on this question: "Do you feel the course was valuable?" Comments included: "Good involvement with peers," "better communication,." "situations apply to life," less stress than regular English," and "has meaning to the world of work."

Teacher reaction to materials:

Allows "at risk" students to be successful in an English class, the only English class in school that allows heterogenous grouping in one class: students ranged in ability from special education to college prep level: materials tie a student's vocational interest and courses to an English curriculum: improves communication skills of the vocationally directed student: actively involves students in a wide variety of activities, both oral and written, and the male/female team teaching aspects provides positive role models.

Recommendations:

The Applied Communications materials will be used next year in an expanded program for two periods a day based on student and teacher recommendations with the support of the administration. The subject matter has also been utilized in other vocational classes such as Diversified Occupations and Work Experience. Roseburg High School is committed to continuing the project as evidenced by the expansion of the course to two periods.

School(s): Josephine County School District (includes three high schools, 9-12.)

Project Director: Teri Houghton

Teacher(s)/Subject Areas:

> Hidden Valley High School: Teri Houghton, English: Carl Johnson, Rick Wickersham, Phil Mills-Price, Lowell Bickel, and Ron Houghton, vocational instructors.

North Valley High School: Jill Folz, English; Keith Hitchko, vocational instructor.

Illinois Valley High School: Unable to implement project model due to a change in personnel prior to implementation time.

Population of District: This three high school district has an approximate enrollment of 2100 students in grades 9-12.

Demographics of District: The three high schools involved in the pilot program have differing needs so each high school presented the program individually but all three offered English credit: Hidden Valley offered a year long English class, taught jointly by an English teacher and several vocational instructors: North Valley presented the program as a portion of advanced vocational courses, and Illinois Valley had planned to offer the model as an Applied Business Communications class.

Project Model: The Applied Communications materials were implemented and evaluated separately by each school in Josephine County. Hidden Valley High School used the project materials as a full year class in which students could earn English credit. North Valley High School integrated the materials into an existing vocational program, with the anticipated target course being one within the trade and industrial areas.

Hidden Valley High School: The Applied Communications materials were shared between one English teacher and instructors from all five of the vocational cluster programs. Selection of students for the project model was accomplished through recommendations of vocational and English staff who targeted eleventh grade students for the new course. The reasoning here was based on two years of experience in which to identify a potential vocational career. These students had also completed several aptitude and interest activities as part of career exploration. These activities include CAPS< COPS< and CDM Inventory. Class size was limited to twenty students. Related classroom activities included, but were not limited to the following : student journals, field trips to vocational work sites, simulated vocational activities, video taping, writing a career report, and listening to speakers from the community, dealing with topics related to the modules and student interests.

North Valley High School: The Applied Communications materials were integrated into an existing vocational program. The technical tgrade and industrial areas were the targeted courses with an emphasis on Advanced Power Mechanics. Instructional units were set up, each unit spanning a two week period of time. Three days were utilized by an English instructor to present intenseive, in-0classroom instruction and practice in Applied Communication skills, drawn from the module materials as well as related materials. The balance of the unit was then taught by the vocational instructor, emphasizing specific communication skills in that vocational field. Power Mechanics class participants were enrolled kin this pilot program. Special needs students were also encouraged to enroll. Related activities included: job simulations, video taping, use of specialized audio visual materials, field trips, and guest speakers.
A total of 18 students were enrolled in the pilot program: 4 seniors, 5 juniors, and 9 sophomores.

Reactions to course for Josephine County were listed under Major Accomplishments and Outcomes and included the following feedback:
The Applied Communications modules emphasize the importance of good communications skills; the materials have improved the students' problem solving skills; students have acknowledged that they are now communicating more effectively with employers and in their interpersonal relationships; the materials worked well with the at risk students, motivating them and aiding them in feeling successful; the idea of applied curricula has opened the door for other applied courses, and the Applied Communications materials increased the awareness of students, administrators and staff of the need to provide students with curriculum that is applicable to career goals.

Recommendations: The Applied Communications materials should be extened to other settings: available for use at the community college levels; componenets should be made available to the business community, and the materials should find use in alternative education settings. Suggestions for improvement of the modules include: regualr update of occupational activites; varied methods of teacher presentation; training sessions for teachers prior to their use of the materials, and a study of a more visual treatement of student text materials.

**Josephine County's Hidden Valley High School will continue a year long English class utilizing the Applied Communications curriculum. Illinois Valley high School will implement some of the Applied Communications modules in their business classes.

LITERATURE BIBLIOGRAPHY FOR APPLIED COMMUNICATION

NONFICTION

Altman, Susan. *Extraordinary Black Americans.* Children's Press

A collection of short and simply written biographical sketches-Wheatley, Tubman, Jackson and others-with special appeal to the reluctant teen reader. Illustrated.

Kraegel, Janet. *Just a A Nurse.* Dutton Publishers.

Based on interviews with nurses, this book is an honest look at the various aspects of the nursing field.

Strom-Paikin, Joyce E. *Medical Treason.* New Horizon Press; distributed by McMillan.

The experiences of a first year hurse and her undercover work to help expose a drug ring headed by hospital personnel.

Salusbury, Hilda Ann. *Only My Dreams.* Academy Chicago..

An English middle-class girl reflects on her growing up during the early 19th century and her endeavors to break away and make a career for herself.

Brooks, Sara. *You May Plow Here: The Narrative of Sara Brooks.* Edited by Thordis Simonsen. W>W> Norton, 1986. 222 p. Black and white photographs.

Sara Brooks is an old woman presently living in Cleveland. She is not famous but she has a real story to tell. In her own words she describes her life as a poor, black child growing up in Alabama early in this century. Her story of poverty, violence, and marriage is a revelation of living and is a powerful statement of survival.

Foster, Rory C. *Dr. Wildlife:The Crusade of a Northwoods Veterinarian*

Franklin Watts, 1985. 182 p. (Paperback:Ballantine Books, 1986.) Black and white photographs.

This is Rory Foster's story of his crusade to treat wounded wildlife and release them back into their natural habitat. He describes his struggle against local and state opposition and relates his efforts at setting up a rehabilitation center for wildlife in Wisconsin.

Bamberger, Michael. *The Green Road Home: A Caddie's Journal of Life on the Pro Golf Tour.* Contemporary Books, 1986. 258 p. Black and white photographs.

Michael Bamberger tells of his experiences as a caddie on the professional golf tour. For six months he carried the bags of the great and not-so-great professional golfers, acquiring knowledge of the game, the players, and the courses.

Berger, Gilda. *Women, Work, and Wages*. Franklin Watts, 1986. 122 p. Black and white photographs, charts, graphs, drawings, and cartoons

This book is a concise, practical guide that offers facts about what is happening to women in the work force today. Berger discusses opportunity in the workplace.and offers suggestions about how to avoid problems stemming from limited education, discrimination, and sexual harassment.

Cohen, Daniel, and Susan Cohen. *How to Get Started in Vide*o. Franklin Watts, 1986. 114 p. Black and white photographs.

This book explains the types of jobs that are related to video and video technology today. Includes a look at how to make videos, and provides a list of publications on the subject of videos.

Macdonald, Robert W. *Exploring Careers in the Military Service.* Rosen Publishing Group/Military Opportunity Series, 1987. 214 p. Black and white photographs and charts.

In this direct, no-nonsense approach, Robert Macdonald offers advice on how to get started in the military. He also explains the differences among the various services. Included are charts of pay scales and allowances, a list of occupations, and information about ROTC programs.

Neufeld, Rose. *Exploring Nontraditional Jobs for Women.* Rosen Publishing Group, 1987. 149 p. Black and white photographs by Neufeld.

With new opportunities opening up for women in blue collar fields, Rose Neufeld reviews positions in construction, electric power, telephone, television, transportation, mechanics, and maintenance fields. For each of these trades, she outlines the nature of the job as well as the personal qualities and training needed. Also included are current pay scales.

Michelson, Maureen R. *Women and Work: Photographs and PersonalWritings. N*ewSage Press, 1986. 179 p. Black and white photogrqaphs edited by Michael R. Dressler and Maureen R. Michelson.

This is the story of women who reveal their hopes, dreams, frustrations, and concerns through personal writings and photographs of working women in America at the close of the twentieth century . From firefighter to jockey, these women all find dignity and purpose in their work.

Terkel, Studs. *Working: People T*alk about What They Do All Day and How *They Feel about What They Do.* Ballantine Books, 1985. (Originally published 1972.) 762 p.

Studs Terkel's oral history is a look into the working days of different and unique individuals-from supermarket checker to Washington Redskins coach. The interviewees talk openly about what they do for a living .

Young, Jeffrey S. *Steve Jobs: The Journey Is the Reward.* Scott, Foresman, 1988. 440 p. Black and white photographs.

This is the story of Steve Job and Stephen Wozniak who combined electronic abilities to form a partnership that would design small computers, whimsically named the Apple I. This is the story of strong personalities caught in the excitement of a developing new industry.

Zacharis, John C., Frances Forde Plude, and Andrew S. Rancer. *Exploring Careers in Communications and Telecommunications.* Rosen Publishing

Group, 1985. 161 p. Black and white photographs, charts, and graphs.

This book surveys the many areas of work in communications, as well as the avenues of careers available in and evolving from this growing field. Since half of the work force in the United States is currently engaged in the handling and dissemination of information, this overview of the communications field stresses the finding of a career path over a particular job at this time in the life of a young adult about to enter the workplace.

Bober, Natalie S. *Breaking Tradition: The Story of Louise Nevelson.* Atheneum, 1984.

Bober traces the trials and struggles of a young woman who chooses to compete in the art world and succeeds. This is the story of Louise Nevelson who at age five emigrated to the United States from Russia and who breaks with tradition to find success in the world of work.

Ching, Lucy. *One of the Lucky Ones.* Doubleday, 1982.

Born blind, Lucy Chin fights for an education and a future. Born in China in the 1930's, there was little hope for a future other than begging. Lucy's grandmother helps her find a productive life that results in her helping many other blind Chinese.

Peavy, Linda, and Ursula Smith. *Women Who Changed things.* Charles Scribner's Sons, 1983.

This a collection of biographies that research the lives of nine women who made an impact on social history: medicine, religion, politics, business, the arts, education ,and athletics.

Anderson, Scott, and James Byrne. *Mega Tips: How to Get and Keep Any Restaurant Job.* Illus. Grace Marie Sheehan and Bo Zaunders. Dodd, Mead, 1984.

Anderson and Byrne explore the positive and negative aspects of working in a restaurant. Included are anecdotes from waiters, bartenders, managers, and other restaurant personnel.

Catalyst Editors. *Upward Mobility.* Warner Books, 1983.

This book contains guidelines and worksheets that will help an individual assess his or her strength and weaknesses so that a solid plan for future success can be created. Though initially intended for women, the suggestions are excellent for everyone.

Curtis, Patricia. *Animal Partners: Training Animals to Help People.* Lodestar Books, 1982.

Using animals to help the handicapped is a new field. This book presents the requirements for the occupation and includes examples of people doing special jobs, from horse trainer to guide-dog trainer.

Douglas, Martha C. *Go for It! How to Get Your First Good Job: A Career-Planning Guide for Young Adults.* Ten Speed Press, 1983.

This book provides a system that will enable readers to see options open to them, set goals for success, and find careers suitable to their personalities. Student experiences are cited in this work.

Hallstead, William F. *Broadcasting Careers for You.* Lodestar Books, 1983.

Broadcasting offers an enormous variety of jobs This book looks at the qualities and skills required for employment in broadcasting and explores the varied job categories in that field as well as looking at requirements and the educational route to follow..

Lerner, Elaine (with C>B> Abbott). *The Way to Go: A Woman's Guide to Careers in Travel.* Warner Books, 1982

For those interested in the world of travel, the travel and leisure business my be one to consider. This book is designed to give direction to people interested in this field and content is appropriate to both women and men. Offers insight into becoming a travel agent and opening a business for oneself.

Saunders, Rubie. *Baby-Sitting for Fun and Profit.* Illus. Tomie de Paola. Archway Paperbacks, 1984.

This book discusses the youngest profession-babysitting. Easy to read , Saunders provides a baby-sitter's checklist and discusses skills that can make the work pleasurable.

Seide, Diane. *Careers in Health Services*; Lodestar Books,. 1982.

More than fifty different careers in the field of medicine are described in this book. Nursing, cytotechnology, respiratory technology, optometry are discussed and educational requirements for each field given.

Shook, Robert L. *Why Didn't I Think of That!* Signet Books, 1983.

This book chronicles the lives of ten people who followed their dreams and became successes. Their stories reveal the qualities and circumstances that allow an entrepreneur to develop.

FICTION

Johnson, LouAnne. *Making Waves: A Woman in This Man's Navy.*
St. Martin's Press, 1986. 233 p. Fiction.

When LouAnne Johnson joined the Navy she got all she bargained for but not in the way she expected. While functioning among overbearing male chauvinist sailors, she earns a journalism degree, gets posted to the Philippines, makes wonderful friends, and ultimatley learns to meet a challenge head-on and win.

POETRY

Plotz, Helen, compiler. *Saturday's Children: Poems of Work.* Greenwillow Books, 1982.

This thematic anthology brings together poetic reflections on work and worker over the ages from various parts of the world. It is divided into four sections and deals with rural occupations, women's work, child labor and unemployment.

PERIODICALS

Elliman, Peter J. "Critical Issues in Vocational Education:An Industrialist's View." American Education, October, 1984 pps. 23-28

This article by the vice president of an industrial company is excellent reading for the teacher of communication skills. It reflects the thoughts of a noted industrialist on the role public education must play if it is to ready students for the world of work. The focus is on building skills so that students, industry's most valuable resource, can sell themselves in the workplace of tomorow

Phillips, John R. "Industry and the Public Schools-A Partnership that can Work." American Education, November, 1983, pps. 28-29..

This article is a success story and is beneficial reading for the teacher of communication skills. It is the story of the Oxford, Massachusetts project_C.O.F.F.E.E.-Cooperative Federation for Educational Experiences, an alternative occupational education program for alienated secondary school students. C.O.F.F.E.E. consists of five occupational programs, all designed as individual study programs and evaluated according to student contract terms.

Frey, Donald N. "The Economy, Productivity and training-A CEO'S View." American Education, December, 1982, pps. 15-18.

Frey reflects on the triumvirate of post high school education: liberal, professional, and vocational. Each part is carefully addressed in terms of unemployment statistics, and competition in the international marketplace. Suggestions for partnership between industry and academia are given. Excellent reading for the teacher of communication skills.

Welms, Wellford W. "Vocational Education and Job Success:The Employer's View." Phi Delta Kappan, Vol. 65 (Jan. 84).

The focus of this article is on vocational education and the need to link it more closely to the labor market as well as to establish new employer-based training efforts. Includes a study of employers in the L.A. area.

Weisberg, Alan. "What Research Has to Say About Vocational Education and the High Schools." Phi Delta Kappan, Vol. 64 (Jan. 83).

Weisberg's article focuses on what research reveals about the nature and quality of vocational education in the high schools. He discusses the attributes and problems of vocational education. Statistical in nature, this article offers answers to those questions most frequently asked about vocational education programs. Insightful reading for the teachers of vocational education programs as well as for those who teach commmunication skills.(adult reading level. A second article follows: topic-"The Vocational Education Graduate in the Labor Market." Again, adult reading.)

Butler, Owen B. "The Young Worker. Why Johnny Can't Get a Job." Current, Feb., 86, pps. 19--20.

The relationship between education and productivity is discussed in this article, based on a study by the Committee for Economic Development (CED), a private business and educational organization. The main goal of the study was to identify the skills, attitudes, and intellectual capabilities that equal success on the job (and in college.) Basic skills, problem solving, and positive values are the findings suggested by the CED study.

Page, Jake. "There's Never a Dull Moment Where Teens Learn a trade." Smithsonian, May, 88, pps.132-142.

Ohio's Great Oaks vocational system works; students practice it faithfully and with a self-confidence rare among today's youth. This article focuses on the many vocational educational experiences the Great Oaks students have as they are bussed to one of four campuses daily for their vocational and academic curriculum. They return to home schools for extra curricular activities. Good reading for the inquisitive vocational education student and for the teacher who is looking for a successful vocational education curriculum model.

Johnson, Carole and Klinsing, Susan. "The Little District That Could." Vocation Education Journal, Vol. 64 (Jan./Feb., 89), pps. 38-40.

A joint effort by Carole Johnson (Colorado Community College and Occupational Education System, Denver, Colo.) and Susan Klinsing (Vocational/Career Education Coordinator in the Harrison School District No. 2, Colorado Springs, Colo.) culminated in the Silver Star Award at the 1988 Houston Film Festival. Students and employees turned actors to produce a video that shows the attributes necessary for successful employability. The Harrison School District in Colo. Springs is committed to preparing youngsters for the world of work. A high tec adventure worth reading about.

Reed, William B. "Three Key Words for Vocational Education." Vital Speeches of the Day. June 15, 1983, pps. 242-44.

William Reed, President of Southern Company and Services, Inc. of Alabama delivers a three point message to the annual meeting of the National Association of State Advisory Councils on Vocational Education. His focus: attitude, basic skills, and profit, all necessary training to form a true partnership between school and business. Good reading for any student who wants to find success in the workplace.

Solorzano, Lucia. "Vocational Education Gets Back to Basics." U.S. News and World Report. July 23, 1984, p. 55.

This article is a frank discussion of the role vocational programs have played in the public school system and focuses on changes needed to upgrade the quality of vocational training. Several good points are made about the necessity of training and skill building so that the American public will see dignity in the work people do with their hands.

Levin, Henry and Russell Rumberger. "The Low-Skill Future of High Technology." The Education Digest, Feb. 13, 1984, pps. 22-23.

Writers Levin and Rumberger, Stanford University, examine the role of high technology and discuss it in terms of industry. High tec, though important, will not replace the workforce. Changes in the instructional system are needed if today's students are to be able to meet the workplace demands of tomorrow.

Dyrenfurth, Michael. "State Graduation Requirements and Vocational Education." *The Education Digest,* Sept. 12, 1985, pps. 57-59.

Is vocational education being phased out of schools due to increased graduation requirements, leaving little time for electives in the vocational areas? Dyrenfurth thinks so. Interviews and surveys indicate so. However, lthere is also movement to improve the quality of vocational education. Several suggestions are given in this article.

Marland, Sidney P. "Career Education:Every Student Headed for a Goal." *The Education Digest,* Nov. 7, 1985, pps. 135-138.

In this article Marland sets forth ideas for a long-range vocational program, beginning in the primary grades and culminating at the secondary level. At this point three suggestions are outlined. Helpful information is given for those who may be working to establish viable vocational programs in a district.

Spence, David. "Rethinking the Role of Vocational Education." *The Education Digest*, Feb. 11, 1987, pps. 48-51.

Spence's article focuses on the findings of the Commission for Educational Quality of the Southern Regional Education Board (SREB) in Atlanta. Recommendations and strategies to improve vocational education and make it a full partner in the essential learning and thinking process are given.

Hobbs, Addison. "Vocational-Technical Education and the Economics of Poverty." *Vocational Education Journal*, Vol. 64 (May 1989).

This article discusses the future of vocational-technical education to meet the needs of a clientele that will include more women, immigrants, and minorities than ever before. Changes in existing programs are suggested and vocational training ideas are examined in terms of a success formula: Voc ed=employment=purchasing power=prosperity.

Hoyt, Kenneth B. "Career Education and Educational Reform." The Education Digest. April, 1985, pps. 49-51.

This article is about the changing role of career education today. Career education advocates may need to look at other ways to implement efforts in education that focus on public education partnerships, employability skills, career decision-making, and productivity.

Leonard, Burr. "This was a business of old men." Forbes. March 9, 1987, pps. 120-122.

Weinstein's success story began with a $1000 loan from his family. Today he is worth millions: his business-coated fabric for aircraft emergency chutes to backpacks and sailcloth for boats. The story of a man with an idea.

"Two Generations Talk Jobs, Opportunity, and the Future." Scholastic Update. Sept. 9, 1988.

Four sets of parents and high school age young people look at careers, salaries, and education.

"The People Who Chart Our World." Scholastic Update, Sept. 23, 1988.

This article takes a close look at two important and yet non-glamorous jobs: cartographer and geographer. Other business and government related jobs in these fields are noted, not all requiring advanced training.

Kirkland, Richard. "The Changing Job Market. Are Service Jobs Good Jobs?" Current. Oct. 24, 1988.

The work done by many Americans today is service oriented and the outlook in services is optimistic. This article focuses on salaries as well as types of service jobs. Kirkland includes survey statistics and overall offers a positive look at the workplace of the 90's.

Levin, Henry M. "Jobs. A Changing Workforce, A Changing Education." Change. Oct., 1984, pps. 32-37.

Professor of Economics at Stanford University, Henry Levin discusses at length the changing workforce. In spite of high technology, defined as occupations requiring advanced training (engineers, scientists, computer specialists) the job market is expanding with only a small percentage of new high tec occupations emerging. Includes a table of the twenty fastest growing occupations through 1995.

"The William T. Grant Foundation Commission on Work, Family and Citizenship." Phi Delta Kappan, (Feb. , 1988), pps. 409-414.

This current study closely examines the educational system and recognizes the need for reform if all young people are to find a place in the world of work. Ten goals are urged to remedy the plight of the unsuccessful post high school student. Different learning styles are addressed. Information is based on recent statistics.

NONFICTION

Terkel, Studs Louis. Hard Times: An Oral History of the Great Depression. N.Y:Pantheon, 1970.

Through interview, Terkel develops a cross-section of how the Great Depression affected people and the ways in which that time period is remembered today.

Terkel, Studs Louis. Division Street: America. N.Y: Pantheon, 1967.

Several headings are listed under this title. Terkel focuses on seventy-one Chicago residents who recall tales of life in Chicago.

Terkel, Studs Louis. American Dreams: Lost and Found. N.Y: Pantheon, 1980.

This is a study of the American dream as revealed through interviews.

The dreams of fame, wealth, and possissions are chronicled in this work.

Terkel, Studs Louis. Working. N.Y: Pantheon, 1972.

The joy of work is depicted by Ruth Lindstrom, a Swedish immigrant, who at age 80 has been a mother to over four hundred kids during her long career as a pediatric nurse.

Milkowitz, Gloria and Madeline Yates. The Young Tycoons. Harcourt, Brace, Jovanovich, 1981.

Ten entrepreneurs between the ages of 12 and 21 are interviewed by the authors. All of the "tycoons" are active in school and interested in earning a lot of money. These stories illustrate the role ingenuity and determination play on the road to success.

Skurzynski, Gloria. Safeguarding the Land. Harcourt, Brace, Jovanovich, 1981..

Three women who work in a field dominated by men are the focus of this work. Skurzynski's book is a concise and realistic portrayal of the problems and prejudices that accompany a career in the outdoors. Includes an appendix for further information.

Jaspersohn, William, Magazine:Behind the Scenes at Sports Illustrated. Little, Brown, 1983..

This illustrated nonfiction work takes readers behind the scenes to the offices of *Sports Illustrated Magazine*, where insiders look at everything from important meetings of senior editors down to the binding and distribution processes that put the magazine into the hands of some two million readers. All facets of production are covered. Good reading for the student who is considering a career in the broad field of publications.

Norton, Joseph L. On the Job. Chicago:J.G. Ferguson, 1970.

Sixty-five people tell what it is like on the job in this easy-to-read book. Divided into five chapters and sixty-five occupations, the content is based on week long diary entries by those engaged in the occupations. Illustrated.

Todd, Ronald and Karen todd. Aim for a Job Working With Your Hands. N.Y: Richards Rosen Press, 1975.

This book describes a variety of occupations: craftsman, technician, tradesman. It includes profiles of workers engaged in various occupations. Apprenticeship information is given in an appendix. Illustrated.

Jewell, Geri and Stewart Weiner. Geri. Morrow, 1984.

This book is a humorous, sensitive, and readable account of growing up with a disability. Told from the first person point of view, Geri Jewell (*Facts of Life* television series) writes about herself, cerebral palsy, and breaking into the entertainment field with a disability.

Nin, Anais. "The Labyrinthine City of Fez." (sh. story)
Anais Nin takes the reader into the Moroccan City of Fez where goods and services are described in terms of color. The young learn a trade from their elders. Careful detail is given to each activity described in this essay, focusing on the importance of hard work and cooperation.

Hobsbawn, Eric. Workers:Worlds of Labor. N.Y: Pantheon Books, 1984.

Hobsbawn, an historian of social movements throughout the world, offers a collection of essays around the theme of the formation and evolution of the working classes. This work concentrates on the ideas and cultures of the working class. A good resource for those who want to know how working lives were lived in the past. 316 pages.

Stratton, Joanna L. *Pioneer Women*. N.Y: Simon and Shuster, 1981.

Joanna Stratton's book is the story of three generations of remarkable pioneer women. It is the memoirs collected by the author's great grandmother and which had been locked away in an attic until 1975. These personal recollections reveal the heroism and determination of the pioneer woman. Includes photographs. 267 pages.

Murray, Janet. _*Strong Minded Women and Other Lost Voices from 19th Century England* . N.Y: Pantheon Books, 1982.

Murray offers a portrait of women in nineteenth-century England. This book is the story of their struggles: issues of their day, stereotypes, and morals. Voices of the past include admonitions from Charles Dickens. Includes black and white illustrations. 437 pages.

NONPRINT MATERIALS

Film.
Deer in the Works, Barr Films.

Based on a short story by Kurt Vonnegut, this film is the story of David Potter, a young journalist who is applying for a public relations position in an industrial complex. Potter is sent to coordinate the PR surrounding the capture of a deer that has been discovered on the loose in the building. It is during this experience that young Potter confronts himself: does he want to become another deer in the works?

Guilfoy, Vivian, Project Director. Connections:Women and Work and Skills for Good Jobs. Newton, Mass:The WEEA Publishing Center.

This is a set of materials which also includes a Gamebook and a Leader's Guide that is designed for middle school students but could be adapted for the older student. Emphasis is on reading and following directions, discussion skills, role playing, career education, group decision making, and problem solving. Consists of a set of modules. Good resource for teachers involved in vocational education .

Film
Career Planning:Putting Your Skills to Work.
Producer and director: John Hopkins Guidance Associates Communications Park. Box 3000, Mt. Kisco, N.Y. 1988. 60 min. video. $239.00.

Film focuses on the important role hobbies, volunteer work, academic strengths and travel preferences play in the road to future employment. Includes eleven interviews of people from diverse occupations. Offers worthwhile job suggestions. A beneficial counseling tool.

Film

Basic Skills for Food Service Workers:Communication Skills. Vocational Media. 1989. 30 min. video. $189.00.

Film focuses on courtesy, group communication, and a recognition of differences in cultural backgrounds. Listening, speaking, writing, and reading skills are covered in this video about the importance of clear communication.

Film.

The Career Journey. Producer Bill Tipper for ACT. Director Jerry Levin. The Media Guild, 11722 Sorrento Valley Rd., San Diego, Cal. 92121, 1984. Released 1988. 28 min. video. $345.00.

The camera visits various workplaces to explore a framework of careers. Video begins with jobs dealing with people, to those involving data, things, and ideas. Includes interviews with a physical therapist and a coach. Voice over narration lists three associated work areas: health care, education, and social servies. Content is pertinent to career decisions.

FICTION

Peck, Richard. This Family of Women. Delacorte, 1983.

This book is a multigenerational family saga which focuses on the lives of five strong, self-reliant women. It chronicles their lives and their interrelationships in the historical settings of the 1850's Gold Rush in America, London in the Gay Nineties, the San Francisco earthquake of 1906,and wartime London of World Wars I and II. It is divided into six parts, each with a different narrator and a different perspective.

Boll, Heinrich. Translated by Leila Vennewitz. "The Balek Scales."
(sh. story)

As a writer, Boll probes the nature of German society in his novels and short stories. "The Balek Scales" is a story of hard work by flax shed workers who ultimately are cheated by "weighted" scales. In a rural nineteenth century setting, "The Balek Scales" is a story of life's hardships and injustices to young and old alike. It is the story of people who take pride in hard work but believe in fairness and justice.

APPLIE[illegible]MMUNICATION

	MODULE														
ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. STUDENTS WILL USE LISTENING, READING AND LITERATURE SKILLS TO UNDERSTAND AND APPRECIATE HUMAN EXPERIENCES AND TO SHARE CULTURAL COMMONALITIES AND DIFFERENCES.															
STUDENTS WILL BE ABLE TO:															
1.1 RECOGNIZE WORDS COMMONLY USED IN GRADE LEVEL MATERIALS INCLUDING SUBJECT AREAS (ELS 1.1).															
b Use context clues in a selection to infer correct word(s).	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
c Distinguish contractions and possessives.	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
d Recognize common words at sight found in written materials.	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
*e Recognize common abbreviations.	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
1.2 DETERMINE MEANING OF UNKNOWN WORDS COMMONLY USED IN GRADE LEVEL MATERIALS, INCLUDING SUBJECT AREAS (ELS 1.2).															
a Use context clues, punctuation and syntax to infer meaning of unknown words and concepts.	T	T	T	T	T	A	T	A	T	A	A	A	A	A	A
b Use knowledge of affixes and root words to determine word meanings.	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
c Use dictionaries, glossaries, and definitions in footnotes to find word meanings.	A	T	T	T	T	A	T	A	T	A	A	A	A	A	A

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	MODULE														
ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.3 IDENTIFY MAIN IDEAS, SUPPORTING DETAILS, AND FACTS AND OPINIONS PRESENTED IN WRITTEN, ORAL, AND VISUAL FORMATS (ELS 2.1).															
a Distinguish facts from opinions.	A	A	A	A	T	A	A	T	T	A	A	A	A	A	A
b Recall both facts and opinions and related supporting details.	A	A	T	A	A	T	A	A	A	A	A	A	A	A	A
c Arrange details by degree of importance.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
*d Identify main idea in longer selections.	No long selections were provided ------→														
e Follow directions or sequences of events when signal words are not given.	0	0	0	0	0	T	T	0	0	0	0	0	0	0	0
1.4 USE INSTRUCTIONAL MATERIALS AS BASIS FOR GAINING KNOWLEDGE AND IMPROVING COMPREHENSION (ELS 2.2).															
a Use table of contents, index, summaries, charts, graphs, and illustrations to locate information needed.	A	T	T	T	T	T	T	A	A	A	A	A	A	A	T
b Use organization of materials (summaries, headings, and review questions) for preview and review.	T	T	T	A	T	A	T	A	A	A	A	A	A	A	A
c Use diacritical markings or respellings to pronounce words.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
d Use selectively and independently a variety of resources such as a thesaurus, an almanac and _Bartlett's Quotations_.	0	T	0	0	0	0	0	0	0	0	0	0	0	0	0

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ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	MODULE 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.5 COMPREHEND IMPLIED MEANINGS OF WRITTEN, ORAL, AND VISUAL COMMUNICATIONS (ELS 3.1).															
a Relate new information to previous knowledge.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
b Synthesize information and draw conclusions.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
c Compare and contrast literal and implied meanings of information from two or more sources.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
d Infer direct and indirect cause and effect relationships.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
e Defend conclusions from information given.	0	T	T	0	T	T	T	T	T	T	A	T	T	T	0
f Make inferences and draw conclusions based on perception of implied meaning.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
g Interpret subtleties of emotional and intellectual states of others as evidenced by body language, gestures, tone, inflection, and volume.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
h Recognize double meanings of words and phrases.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.6 DISTINGUISH AND INTERPRET SOUNDS OF NATURE, LANGUAGE, MUSIC, AND ENVIRONMENT (ELS 4.3).															
a Identify, analyze, interpret, and appreciate sounds of nature, language, music, and environment.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
b Use discrimination skills to enhance interpretation of natural and created sounds.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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	MODULE														
ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.7 USE A VARIETY OF LISTENING SKILLS															
*a Analyze and describe specific verbal and nonverbal techniques used by self and others.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
*b Analyze and describe own and others' use of listening skills.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
1.8 DETERMINE THE SIGNIFICANCE AND ACCURACY OF INFORMATION AND IDEAS PRESENTED IN WRITTEN, ORAL, AURAL, AND VISUAL COMMUNICATIONS (ELS 4.1).															
a Distinguish between logical and illogical conclusions.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
b Identify propaganda and other persuasion techniques.	T	0	0	0	0	0	0	T	T	0	T	0	T	0	0
c Identify biases and stereotypes.	0	0	0	0	T	T	0	T	T	A	0	T	T	T	0
*d Use primary and secondary source materials to verify information.	0	T	0	T	0	0	0	0	0	0	0	0	0	0	0
*e Recognize sources of persuasion.	T	0	0	0	0	0	0	T	T	0	T	T	T	T	0
1.9 LISTEN, READ, VIEW, AND EVALUATE PRESENTATIONS OF MASS MEDIA (ELS 4.4).															
a Evaluate roles of mass media in society.	0	0	0	0	0	0	0	0	0	T	0	0	0	0	0
*b Demonstrate appropriate audience skills for different media presentations.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
c Listen, read, and view critically.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
d Recognize elements and use of propaganda techniques found in audio and visual communications.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	MODULE 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
e Employ intellectual defenses against propaganda techniques.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.10 DEMONSTRATE AN APPRECIATION OF READING AS LIFE LONG SOURCES OF LEARNING.															
*a Choose selections that encompass a variety of interests.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*b Share informal judgments concerning types of selections using examples from own reading.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*c Identify reading selections related to potential career choices.	0	T	0	T	0	0	0	0	0	0	0	0	0	T	0
1.11 GENERATE AND TEST INTERPRETATIONS, EXPLANATIONS, PREDICTIONS, AND HYPOTHESES ABOUT READING SELECTIONS (ELS 6.2).															
a Critically analyze explanation and interpretation to confirm or validate them.	0	T	T	0	0	0	0	0	0	T	0	0	0	0	0
*b Develop a hypothesis using information from a variety of sources.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
1.12 MAKE REASONED EVALUATIONS ABOUT READING SELECTIONS (ELS 6.4).															
a Evaluate the effect of fallacies on the clarity of communications.	0	0	0	0	T	T	0	T	T	A	0	T	T	T	0
b Assess the appropriateness of written communication in view of the intended audience and purpose of the communication.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T

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ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
c Critically evaluate arguments or positions in terms of known facts.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
1.13 DEMONSTRATE KNOWLEDGE OF A VARIETY OF LITERATURE.	Literature is not a part of the Applied Communications material.														
*a Analyze several pieces of literature and written by American authors.															
*b Analyze several pieces of literature representing diverse cultures and time periods.															
*c Synthesize information about a given culture described in several different literature selections.															
*d Identify various literary forms such as drama, poetry, essays, novels, and short stories.															
*e Evaluate reasonableness of personal reactions and responses to literature in relation to textual information.															
1.14 DEMONSTRATE KNOWLEDGE OF LITERARY CONVENTIONS AND ELEMENTS OF STRUCTURE.	Literature is not a part of the Applied Communications material.														
*a Describe the elements of fiction and their function in a piece of literature.															
*b Analyze effects of figurative language on the meaning and beauty of literature selection.															
*c Compare and contrast authors' styles.															

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	MODULE														
ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.15 CLARIFY PURPOSES OF ASSIGNMENT (ELS 7.1).															
a Determine general purpose of assignment and ask clarification questions, if necessary.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
b Determine ideas, concepts, generalities, principles, and issues addressed in the assignments.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
1.16 USE RESOURCES BEYOND THE CLASSROOM (ELS 7.2).															
a Locate, check out, and return books and other circulating media materials.	0	T	A	A	0	0	0	0	T	T	0	0	0	A	T
*b Locate and use noncirculating reference materials including electronic sources.	0	T	T	0	0	0	0	0	T	T	0	0	0	T	T
c Use library classification system and services to locate specialized resources required to complete assignments.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	T
*d Locate and use different reference sources such as personal interviews and on site visits for a variety of purposes including career information.	0	T	T	T	T	T	T	T	T	T	T	T	T	T	T
1.17 SELECT AND USE APPROPRIATE STUDY TECHNIQUES (ELS 7.3).															
a Follow a study plan including: goal setting, time management, appropriate study environment, processing of information.	0	T	0	0	0	0	0	0	0	0	0	0	0	0	0

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	MODULE														
ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
b Accomplish learning task using appropriate study techniques (preview and review chapters, read and reread text, ask clarifying questions, seek help when needed, use memory devices, summarize, synthesize, study with classmates, use self questioning).	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
c Vary reading rate according to purpose for reading the selection (skim for content overview, scan for specific information).	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
d Keep study materials, log, related notes, and filing system organized and accessible.	0	0	0	T	0	0	0	0	0	0	0	0	0	0	0
e Turn in assignments on time.	T	A	A	T	A	A	A	T	A	A	A	T	A	A	A
f Use appropriate test taking techniques.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*g Identify how independent learning techniques assist in continuing career development.	0	T	0	T	0	0	T	T	T	0	0	0	T	T	

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ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	MODULE 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2.0 STUDENTS WILL USE WRITING AND SPEAKING SKILLS IN A VARIETY OF MODES OF COMMUNICATION AND SELF EXPRESSION.															
STUDENTS WILL BE ABLE TO:															
2.1 SPEAK AND READ ORALLY WITH STANDARD PRONUNCIATION, APPROPRIATE VOLUME, RATE, GESTURES, AND INFLECTIONS (ELS 1.3).															
b Pronounce words according to acceptable Standard English.	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
*c Use verbal and nonverbal communication skills effectively in oral readings and presentations.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
*d Demonstrate appropriate oral presentation skills such as poise, posture, correct use of language, gesture, and intonation.	T	T	T	T	T	T	T	T	T	T	T	T	T	A	A
2.2 USE ORAL COMMUNICATION TO GIVE AND RECEIVE INFORMATION, DIRECTIONS, AND FOR ENJOYMENT (ELS 2.3).															
*a Paraphrase oral and written messages.	T	T	T	T	T	T	T	T	A	T	A	A	A	A	A
b Give accurate oral directions.	0	0	A	0	T	T	T	A	A	T	T	T	A	A	A
*c Demonstrate appropriate verbal and nonverbal behaviors including simulated job interview situation.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
d Ask questions designed to clarify, gain assistance, or locate information.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T

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	MODULE														
ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
e Share ideas and information orally with others.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
f Develop accurate detail based on oral explanations by others.	A	A	A	T	A	T	T	T	T	T	T	T	T	T	A
h Take and make notes based on oral presentations.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
i Prepare accurate, detailed summaries from oral presentations.	0	0	0	0	T	T	0	T	0	T	0	T	T	T	A
j Follow multi step oral instructions.	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
*k Identify main idea in a long oral presentation.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*l Interpret poetry and drama orally.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.3 USE GROUP DISCUSSION SKILLS APPROPRIATELY.															
*a Demonstrate group discussion skills such as questioning, contributing, taking turns, sharing ideas, and clarifying a point.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	A
*b Model appropriate roles of participants and facilitators in group discussion.	0	0	0	0	T	T	A	A	A	T	A	A	T	A	A
*c Evaluate the effectiveness of a group discussion. Process of group discussion not product.	0	0	0	0	T	T	0	0	0	0	0	0	0	0	0
2.4 USE A VARIETY OF TECHNIQUES TO GENERATE WRITING AND SPEAKING TOPICS (PREWRITING) (ELS 5.1).															
a Use personal experiences, knowledge, and feelings as sources of writing.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T

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	MODULE														
ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
b Use idea generation techniques such as brainstorming and focused object thinking.	T	T	T	T	T	T	T	T	T	T	T	T	A	A	T
c Record ideas, observations, facts, and questions for later use.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
d Use subject area content as sources of topics.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
e Discuss and share thoughts and ideas.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
2.5 ORGANIZE IDEAS IN UNDERSTANDABLE FORMAT IN PLANNING WRITTEN AND ORAL PRESENTATIONS (ELS 5.2).															
a Classify words, topics, and ideas.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
b Use evidence from verifiable sources to support own ideas and concepts.	0	T	T	T	0	0	T	0	T	0	0	0	T	T	T
c Select and use details, examples, illustrations, evidence, and logic to develop a topic.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
d Organize information using formats such as outlining, clustering, and making maps and charts.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
e Plan an oral presentation using a coherent sequence of thought, clarity of presentation, and suitable vocabulary.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T

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APPLIED COMMUNICATION

ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	MODULE 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2.6 SELECT AND USE LANGUAGE, GESTURES, AND SYMBOLS APPROPRIATE TO AUDIENCE, PURPOSE, TOPIC, AND SETTING WHEN PLANNING ORAL AND WRITTEN PRESENTATIONS (ELS 5.5).															
a Employ verbal, symbolic, graphic, and visual techniques to convey information.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
b Use gestures and inflections to convey meaning.	T	0	T	T	T	T	T	T	T	T	T	T	T	0	0
c Design communication appropriate to topic, audience, and desired outcome.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	0
*d Evaluate the use of different levels of formal and informal language.	T	T	T	T	T	A	T	T	T	T	A	A	A	A	A
e Plan and make oral or visual presentations.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
f Evaluate effects of communication and modify subsequent communication.	T	T	A	A	T	A	A	T	A	T	T	T	A	A	A
2.7 SELECT APPROPRIATE FORM OF WRITING BASED ON AUDIENCE AND PURPOSE IN PREWRITING AND PLANNING (ELS 5.3).															
a Write in a variety of forms such as personal essays, journals, reports, stories, letters, and dialogues.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
b Use language, information, style, and format appropriate to purpose and selected audience.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	A

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	MODULE														
ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2.8 PRESENT IDEAS IN UNDERATAINABLE SEQUENCE ON THE TOPIC SELECTED IN PLANNING AND DRAFTING WRITTEN AND ORAL COMMUNICATION (ELS 5.4).															
a Write complete sentences.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
b Write essays in which all paragraphs are related to the topic.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
c Write paragraphs containing a stated main idea and a closing sentence.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
d Write multiparagraph letters and reports.	0	T	T	0	0	T	0	T	T	T	T	0	0	0	T
*e Write in narrative, expository, and persuasive modes.	T	T	T	0	T	T	T	T	T	T	T	T	T	T	T
*f Write a letter of application for a job.	0	0	0	T	0	0	0	0	0	0	0	0	0	0	0
2.9 MAKE REASONED EVALUATIONS ABOUT ORAL AND WRITTEN COMMUNICATIONS (ELS 6.4).															
a Evaluate the effect of fallacies on the clarity of communications.	0	0	0	0	T	T	0	T	T	A	0	T	T	T	0
b Assess the appropriateness of oral and written communication in view of the intended audience and purpose of the communication.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
c Critically evaluate arguments or positions in terms of known facts.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
d Assess the worth of a given course of action or policy.	T	T	T	T	T	A	T	T	T	T	T	T	T	T	T

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APPLIED COMMUNICATION

	MODULE														
ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
e Use established criteria to assess the quality of a product, a work of art, or a performance.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
2.10 RECOGNIZE, CONSTRUCT, AND DRAW INFERENCES CONCERNING RELATIONSHIPS AMONG THINGS AND IDEAS IN PLANNING AND DRAFTING WRITTEN AND ORAL COMMUNICATION (ELS 6.1).															
a Develop and use a classification system for organizing data.	A	A	T	A	A	A	T	A	A	A	A	A	T	A	A
b Construct and use analogies, models, and metaphors.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*c Use figurative language in a short piece of writing.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*d Analyze effect of figurative language on own and others' writing.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.11 EVALUATE AND REVISE OWN WRITING FOR MEANING, CLARITY, AND COMPREHENSIVENESS (ELS 5.6).															
a Revise own writing for correctness and comprehensiveness.	A	A	T	A	T	T	T	T	T	T	T	T	T	T	A
b Vary sentence structures.	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
c Use descriptive, qualifying, and connecting terms to enhance meaning, clarity, and precision.	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
d Distinguish subtleties of written expression; use tense, tone, and vocabulary appropriate to audience.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T

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	MODULE														
ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
e Use transitional words and phrases to connect ideas in sentences and paragraphs.	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
*f Revise and edit writing to make it grammatically correct.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
*g Use sentence combining techniques to create and express more complex concepts.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.12 APPLY TO CONVENTIONS OF WRITING TO PRODUCE EFFECTIVE COMMUNICATION WHEN EDITING AND PROOFREADING (ELS 5.7).															
a Edit to produce a correct, legible, effective piece of writing.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
2.13 DETERMINE THE SIGNIFICANCE AND ACCURACY OF INFORMATION AND IDEAS PRESENTED IN WRITTEN, ORAL, AURAL, AND VISUAL COMMUNICATIONS (ELS 4.1).															
a Distinguish between logical and illogical conclusions.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
b Identify propaganda and other persuasion techniques.	T	0	0	0	0	0	0	T	T	A	0	T	T	T	0
c Identify biases and stereotypes.	0	0	0	0	T	T	0	T	T	A	0	T	T	T	0
2.14 LISTEN, READ, VIEW, AND EVALUATE PRESENTATIONS OF MASS MEDIA (ELS 4.4).															
a Evaluate roles of mass media in society.	0	0	0	0	0	0	0	0	0	T	0	0	0	0	0

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	MODULE														
ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
*b Demonstrate appropriate audience skills for different media presentations.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
c Listen, read, and view critically.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
d Recognize elements and use of propaganda techniques found in audio and visual communications.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
e Employ intellectual defenses against propaganda techniques.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.15 USE ORAL COMMUNICATION TO INFLUENCE OTHERS AND TO RESPOND TO PERSUASION (ELS 4.2).															
a Provide logical answers based upon factual data.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
b Use primary and secondary source materials to verify information.	0	T	T	T	T	A	T	A	T	A	A	A	T	T	A
c Express own feelings, knowledge, and beliefs.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
d Argue opposite sides of issues.	0	0	A	0	T	T	A	T	T	T	0	T	A	A	A
e Recognize sources of persuasion and select appropriate persuasive response.	T	0	0	0	0	0	0	T	T	0	T	T	T	T	T
f Use verbal persuasion techniques in class presentation.	0	0	T	0	T	T	T	T	T	T	T	T	0	0	T
2.16 DEMONSTRATE AN APPRECIATION OF WRITING AND ORAL COMMUNICATION SKILLS AS A LIFE LONG MEANS OF SELF EXPRESSION, LEARNING, AND PERSONAL DEVELOPMENT.															
*a Share personal experiences and insights orally and in writing.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T

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ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	MODULE 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
*b Analyze a piece of literature for the author's personal message.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*c Describe how some major communication skills contribute to learning and personal development.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
*d Use writing as a tool for thinking: generating new ideas, clarifying a viewpoint and communicating it to others.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
2.17 DESCRIBE THE DEVELOPMENTS AND CHANGES WHICH LANGUAGE HAS UNDERGONE AND CONTINUES TO UNDERGO.															
*a Identify the factors that make language dynamic such as social, cultural, technological, and geographical influences.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*b Describe dialectal differences.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*c Explain how jargon and slang change the nature of language.	0	0	0	0	T	0	0	T	0	0	0	0	0	0	0
2.18 RECOGNIZE THE BEAUTY AND RHYTHM OF LANGUAGE.															
*a Identify rhyming words, sound devices, and rhythm in an oral or written selection.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*b Identify rhythmic forms of language.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*c Choose and present an example of beautiful or rhythmic language (own or other).	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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	MODULE														
ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2.19 GENERATE AND TEST INTERPRETATIONS, EXPLANATIONS, PREDICTIONS, AND HYPOTHESES IN WRITTEN AND ORAL COMMUNICATION (ELS 6.2).															
a Critically analyze explanation and interpretation to confirm or validate them.	0	T	T	0	0	0	0	0	0	T	0	0	0	0	0
*b Develop a hypothesis using information from a variety of sources.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
*c Design a means to test hypotheses in an oral or written communication.	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
2.20 FORMULATE AND SUPPORT A POSITION ORALLY AND IN WRITING USING APPROPRIATE INFORMATION AND SOUND ARGUMENT (ELS 6.5).															
a Analyze authoritative data to determine what alternative positions are possible on a specific issue.	0	T	T	T	T	T	T	A	T	T	A	A	A	A	A
b Formulate, support, and defend a position based upon information gathered from objective and authoritative sources.	0	T	T	T	T	T	T	A	T	T	A	A	A	A	A
c Analyze arguments against own cultural knowledge or beliefs.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.21 REFLECT UPON AND IMPROVE OWN REASONING IN ORAL AND WRITTEN COMMUNICATIONS (ELS 6.6).															
a Present arguments supporting the use of deductive or inductive reasoning for a particular purpose.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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	MODULE														
ENGLISH LANGUAGE ARTS COMMON CURRICULUM GOALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
b Evaluate when bias, inconsistency, or other weaknesses affect reasoning.	0	0	0	0	T	T	0	T	T	A	0	T	T	T	0
c Defend position when criticized by an authority who is biased.	0	0	0	0	0	0	0	T	0	0	0	T	T	0	0
2.22 SELECT AND USE APPROPRIATE STUDY TECHNIQUES (ELS 7.3).															
a Follow a study plan including: goal setting, time management, appropriate study environment, processing of information.	0	T	0	0	0	0	0	0	0	0	0	0	0	0	0
b Accomplish learning task using appropriate study techniques (preview and review chapters, read and reread text, ask clarifying questions, seek help when needed, use memory devices, summarize, synthesize, study with classmates, use self questioning).	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
c Vary reading rate according to purpose for reading the selection (skim for content overview, scan for specific information).	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
d Keep study materials, log, related notes, and filing system organized and accessible.	0	0	0	T	0	0	0	0	0	0	0	0	0	0	0
e Turn in assignments on time.	T	A	A	T	A	A	A	T	A	A	A	T	A	A	A
f Use appropriate test taking techniques.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Principles of Technology

Applied Communications

* Applied Math

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Competency-Based Vocational Education

Bend, Oregon
October 18-20, 1989

Applied Mathematics

APPLIED MATHEMATICS
INTRODUCTORY INFORMATION

Applied Mathematics is a set of modular learning materials prepared to help high school vocational students and others develop and refine job-related math skills. The overall course includes material that focuses on arithmetic operations, problem-solving techniques, estimation of answers, measurement skills, geometry, data handling, simple statistics, and the use of algebraic formulas to solve problems. Though the text includes some material found in traditional areas of arithmetic, geometry, algebra, and simple trigonometry, the emphasis remains on the ability to understand and apply functional mathematics to solve problems in the world of work.

What Kind of Students Need Applied Mathematics?

The student materials are designed to be used in a one-year course for academic credit toward high school graduation. Or, alternatively, they may be used in part and infused, as needed, into existing vocational courses. They have been prepared for learners who have an eighth-grade, pre-algebra mathematics competency level and who may feel a certain anxiety about mathematics. They are written generally at an eighth-grade reading level.

The materials are deemed appropriate for high school students in grades nine through twelve who are not necessarily baccalaureate-bound. Many of these students represent the traditionally underserved. The Applied Mathematics materials may be used by adults who are engaged in vocational and technical training also. The post-high school learners may be found in skill centers, Job Corps centers or in learning centers involved in preemployment training, retraining, upgrade training, or apprenticeship training.

Who Can Teach Applied Mathematics?

Applied Mathematics may be taught by teachers who understand the basic concepts of mathematics and who can communicate to students how mathematics is used in today's workplace. If the materials are taught by certified teachers of mathematics, academic credit for mathematics can be expected. Some schools may choose to use vocational teachers teamed with mathematics teachers and offer a credit in either area or offer the credit on a shared basis.

Applied Mathematics is being developed by a consortium of leaders in vocational education. Materials will be available for classroom use in August, 1989.

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FEATURES OF THE APPLIED MATHEMATICS LEARNING MATERIALS

What is the Scope and Sequence of Applied Mathematics?

Applied Mathematics is made up of 22 separate, modular units. They are

1. Learning Problem-solving Techniques
2. Estimating Answers
3. Measuring in English and Metric Units
4. Using Graphs, Charts, and Tables
5. Dealing with Data
6. Working with Lines and Angles
7. Working with Shapes in 2 Dimensions
8. Working with Shapes in 3 Dimensions
9. Using Ratios and Proportions
10. Working with Scale Drawings
11. Using Signed Numbers and Vectors
12. Using Scientific Notation
13. Precision, Accuracy, and Tolerance
14. Solving Problems with Powers and Roots
15. Using Formulas to Solve Problems
16. Solving Problems That Involve Linear Equations
17. Graphing Data
18. Solving Problems That Involve Nonlinear Equations
19. Working with Statistics
20. Working with Probabilities
21. Using Right-triangle Relationships
22. Using Trigonometric Functions

In addition, for those learners who may not have an adequate working knowledge of eighth-grade pre-algebra mathematics, three optional review units have been prepared. They are entitled:

A. Getting to Know Your Calculator
B. Naming Numbers in Different Ways
C. Finding Answers with Your Calculator

Each of these units encourages student use of calculators while reviewing some of the main ideas that deal with numbers, fractions, decimals, and percents.

Do the Materials have "Presentation Flexibility"?

The Applied Mathematics learning materials may be presented as a stand-alone course, beginning with the three optional units (if needed) and moving sequentially through the remaining 22 units. Or, a certain subsection of the 25 units may be selected and used as appropriate mathematics materials, for example, in support of vocational studies in health occupations, automotive technology, home economics or agriculture.

What Does a Typical Unit of Applied Mathematics Contain?

Each unit in the **Applied Mathematics** learning materials is an integrated learning package made up of supporting parts: video program, text, mathematics laboratory activities, practical problem-solving exercises, and glossary. Audiovisual support is provided by a unit video program. This program introduces the math unit and sets the stage for the relevance of mathematics in the world of work. Particular attention has been given to showing traditional minorities in nontraditional roles. The mathematics concepts for each unit are explained carefully in the student text. The reader is invited to play a participatory role in the learning process. Participation is encouraged by activities the learner performs while studying the material. Hands-on mathematics activity laboratories are provided to make the math concepts "come to life" and be more useful. The activities are performed in the classroom or school environment (generally) with relatively inexpensive equipment. Finally, a set of 40 problems that apply the unit math concepts to general and occupationally specific practical situations is made available for use as needed. These problems are almost always "word problems" and range in difficulty from the less difficult to the more difficult.

TEACHING STRATEGY

Each of the 25 units of **Applied Mathematics** may be taught in a similar manner. The teaching strategy outlined below is meant to serve only as a GUIDE--as a SUGGESTED teaching pattern. Different teachers, in different learning environments, with different student populations will necessarily modify the pattern to suit their individual needs. By design, the learning materials have been prepared to offer the teacher sufficient flexibility to expand or contract the time devoted to each unit. For example, teachers may choose to involve students in one, two or all of the suggested laboratory activities. In the same spirit, teachers may choose to assign 5, 10, 15 or more of the 40 problems provided in each unit.

How Can a Typical Unit Be Taught?

The suggested teaching plan is divided into six activity sessions. The sessions concentrate on "Getting Started," "Learning the Skills," "Applying the Skills" and "Looking Back." It is important to note that we are NOT equating six sessions with six traditional class periods of 40 or 50 minutes each. Rather, we suggest that the six sessions serve as a guide to the intended division of activities, and that the length of time devoted to each session--based on student backgrounds, course goals and time available--be determined by the teacher.

Session 1 is introductory in nature. It involves overviewing the unit, viewing and discussing the video, and working--as a class--the problem proposed in the video. Session 1 sets the stage for the math concepts to be learned.

A Flexible Teaching Plan

Session 1: Getting Started	Sessions 2 and 3: Learning the Skills	Sessions 4 and 5: Applying the Skills	Session 6: Looking Back
• Overview of Unit • Video • Class Problem	• Read and Do • Class Activities • Class Discussions • Study Examples	• Hands-on Mathematics Lab • Solve Problems • Use Calculators	• Review • Evaluate Programs

Sessions 2 and 3 deal with the math concepts presented in the unit. Through the "read and do" material in the text, class activities, class discussion and study of examples, the students learn about the basic concepts presented in the unit.

Sessions 4 and 5 focus on applying the mathematics skills in lab-oriented activities and problem-solving exercises. The use of calculators is strongly encouraged throughout these activities. Students complete the lab activities as group efforts, collecting data, making calculations and discussing their results. Similarly, students work the problem-solving exercises in groups--in an informal atmosphere--helping one another, discussing approaches and solutions with each other and with the teacher, as required.

Session 6 is a wrap-up session. It is appropriate to review the unit objectives, watch the video again, and recap the ideas presented in the summary. An end-of-unit test to evaluate student progress may be administered at this time.

IN SUMMARY . . .

Applied Mathematics follows the applications approach to learning that has been used in the applied science materials entitled **Principles of Technology**. Mathematics will be made relevant by showing how it is used in the world of work and by teaching problem solving through application activities. Where possible, the applications will be obtained from the major occupational areas: agriculture and agribusiness, business and marketing, health occupations, home economics, and industrial technology.

APPLIED MATHEMATICS

Unit Objectives

Unit A – Getting to Know Your Calculator

1. Enter numbers, fractions, and decimals into a calculator and read the output displayed by a calculator.
2. Use the parentheses keys on a calculator.
3. Add, subtract, multiply, and divide fractions with a calculator.
4. Add, subtract, multiply, and divide mixed numbers with a calculator.
5. Add, subtract, multiply, and divide decimals with a calculator.

Unit B – Naming Numbers in Different Ways

1. Change percents to decimals.
2. Change decimals to percents.
3. Use a calculator to change fractions to decimals.
4. Change decimals from your calculator to fractions.
5. Solve problems that contain information in the form of fractions, decimals, or percents.

Unit C – Finding Answers with Your Calculator

1. Read the problem and begin to understand the situation.
2. Figure out what the problem is asking you to find.
3. Decide what math operations (+, –, ×, ÷) to do as you solve a problem.
4. Use your calculator to work problems that have more than one step.

Unit 1 – Learning Problem-solving Techniques

1. Read a problem and decide what is given and what is to be found.
2. Develop a plan for solving the problem.
3. Carry out your plan to solve the problem.
4. Check the answer and decide if it is reasonable.

Unit 2 – Estimating Answers

1. Make rough estimates.
2. Round and truncate whole numbers to a given number of digits.
3. Round and truncate decimal numbers to a given number of digits.
4. Estimate answers to problems that involve several steps.
5. Check the answers to problems to make sure they are reasonable.

Unit 3 – Measuring in English and Metric Units

1. Use the common measurement units for length, area, volume, capacity, and weight in the English system.
2. Use the common measurement units for length, area, volume, capacity, and weight in the metric system.
3. Convert measurement units from one form to another and carry out calculations that involve various measurement units.
4. Read measurements taken with common measuring tools.
5. Use tools to measure quantities and solve problems that involve these measurements.

Unit 4 – Using Graphs, Charts, and Tables

1. Read tables.
2. Read and draw bar graphs.
3. Read circle graphs.
4. Read and draw line graphs.
5. Interpolate readings on a graph.
6. Extend a line graph so you can estimate more values.

Unit 5 – Dealing with Data

1. Recognize a problem that needs more data, and find a source for that data.
2. Collect the data you need to solve a problem.
3. Organize the data to help you solve the problem.
4. Interpret or use the data so you can solve the problem.

Unit 6 – Working with Lines and Angles

1. Name the different parts of lines, angles, and circles.
2. Recognize parallel and perpendicular lines.
3. Draw lines, angles, and circles.
4. Measure line segments and angles.
5. Draw lines and angles to produce parallel and perpendicular lines.
6. Use geometric figures to solve work-related problems.

Unit 7 – Working with Shapes in Two Dimensions

1. Identify common figures (such as rectangles, squares, triangles, parallelograms, trapezoids, and circles) within objects.
2. Calculate the perimeter and area of common figures.
3. Calculate the circumference and area of circles.
4. Solve work-related problems that involve common figures.

Unit 8 – Working with Shapes in Three Dimensions

1. Identify cylinders, rectangular solids, cones, and spheres.
2. Calculate surface area and volume for cylinders, rectangular solids, cones, and spheres.
3. Solve prolems that involve cylinders, rectangular solids, cones, and spheres.

Unit 9 – Using Ratios and Proportions

1. Read and interpret ratios.
2. Compare ratios.
3. Recognize and write proportions from given information.
4. Distinguish between direct and indirect relationships.
5. Solve proportions in practical, work-related problems.

Unit 10 – Working with Scale Drawings

1. Read and use the scale of a drawing.
2. Find the dimensions of an object from a scale drawing.
3. Find distances and directions on land maps.
4. Make simple scale drawings.

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Unit 11 - Using Signed Numbers and Vectors

1. Identify signed numbers.
2. Find the absolute value of signed numbers.
3. Combine signed numbers.
4. Find the magnitude and direction of a vector.
5. Solve problems using signed numbers and vectors.

Unit 12 - Using Scientific Notation

1. Write large and small numbers in power-of-ten notation.
2. Read and write numbers in scientific notation.
3. Enter numbers written in scientific notation into a calculator and read answers in scientific notation displayed by a calculator.
4. Combine numbers written in scientific notation to solve problems.

Unit 13 - Precision, Accuracy, and Tolerance

1. Distinguish between counting and measuring, and between precision and accuracy.
2. Read and write measurements to show precision and tolerance.
3. Compare measurements to specified tolerances.
4. Use significant digits to indicate the accuracy of a measurement.
5. Use precision tools to make measurements.
6. Calculate with measurements and round the results.

Unit 14 - Solving Problems with Powers and Roots

1. Read and write numbers expressed as powers.
2. Estimate the values of numbers written as powers.
3. Read and write numbers expressed as roots.
4. Find powers and roots of numbers using a calculator.
5. Solve problems that involve numbers written as powers and roots.

Unit 15 – Using Formulas to Solve Problems

1. Read and write a formula.
2. Rearrange the parts of a formula to fit your problem.
3. Substitute values into the formula and find an answer.
4. Use your calculator as you solve problems with formulas.

Unit 16 – Solving Problems That Involve Linear Equations

1. Translate a problem into an equation.
2. Recognize and work with the parts of an equation.
3. Simplify and solve an equation.
4. Check the solutions of the equation and the problem.

Unit 17 – Graphing Data

1. Graph data as points on a coordinate system.
2. Graph an equation.
3. Find the slope of a graphed line.
4. Find the intercepts of a graphed line.

Unit 18 – Solving Problems That Involve Nonlinear Equations

1. Recognize some nonlinear equations (involving squares, square roots, and reciprocals of the variable) and become familiar with their graphs.
2. Solve a nonlinear equation, draw its graph, and check your work.
3. Find pairs of values for a nonlinear formula in a stated problem, graph the formula, and read values from the graph.

Unit 19 – Working with Statistics

1. Distinguish between mean, mode and median as measures of central tendency.
2. Calculate the mean, mode and median for a set of data.
3. Draw a histogram to represent frequency distributions of data.
4. Distinguish between range, trend, and standard deviation as measures of variability.
5. Interpret the characteristics of a normal curve.
6. Calculate the range and standard deviation to describe a set of data.

Unit 20 – Working with Probabilities

1. Find the probability of some simple events.
2. Count the number of ways an event can happen.
3. Draw diagrams and charts to help find probability.
4. Use your calculator to find probabilities.

Unit 21 – Using Right-triangle Relationships

1. Name the parts of a right triangle.
2. Use the Pythagorean formula to find a side of a right triangle.
3. Use the characteristics of 3 : 4 : 5, 45°- 45° and 30°- 60° right triangles to solve practical problems.
4. Use the ratios for the sine, cosine, and tangent of an angle to solve problems that involve triangles.
5. Use your calculator as you solve problems that involve right triangles.

Unit 22 – Using Trigonometric Functions

1. Use your calculator to find sine and cosine values.
2. Draw a graph of sine and cosine waves.
3. Find the amplitude, wavelength, period, and frequency of sine waves.
4. Find the phase shift between two sine waves.

APPLIED MATHEMATICS

I. COURSE OVERVIEW

Applied Mathematics is a set of modular learning materials designed to help high school students develop job-related math skills. The overall course includes material that focuses on arithmetic operations, problem-solving techniques, estimation of answers, measurement skills, informal geometry, data handling, simple statistics, and the use of formulas to solve problems. The course emphasizes applying functional mathematics to solve problems in the world of work.

Each unit in Applied Mathematics is an integrated package made up of the supporting parts: video program, text, activities, and practical problem-solving exercises. Audiovisual support is provided by a unit video program. This program helps to motivate the student by setting the stage for the relevance of the particular math skills in the world of work. The mathematics skills for each unit are explained in the student text. Participation is encouraged by activities the learner performs while studying the material. Hands-on activity labs are provided to make the math concepts "come to life" and be more meaningful. The lab activities are performed in the classroom or school environment with relatively inexpensive equipment. Finally, a set of problems that apply the unit math skills to general and occupationally specific situations is available for use as needed. These problems are almost always "word problems" including a range of difficulty so the course can be modified to fit the abilities of each particular class of students.

The modular learning materials make the course flexible with all the units presented sequentially, or certain subsections of the 25 units may be selected as appropriate mathematics materials to support the individual needs of a particular area of vocational study.

Each unit is presented with the same basic format of "Getting Started", "Learning the Skills", "Applying the Skills", and "Looking Back". "Getting Started" is an introduction and overview including the unit video and class problem presented by that video. "Learning the Skills" includes reading and study of the text materials, study activities, and skill drills. "Applying the Skills" has one to three hands-on lab activities and problem solving activities. Students are encouraged to use a scientific calculator in these activities. "Looking Back" is summarizing the unit with a review of the materials and activities and the unit test for evaluation. The course also includes three unit pre-tests and post tests.

II. GENERAL COURSE GOALS

The student will be able to:

1. Apply problem solving procedures including gathering and analyzing data from hands-on experiences, information presented in charts, tables, graphs, formulas and/or equations.

2. Use group efforts to solve problems.
3. Use a scientific calculator.
4. Use a variety of measuring instruments, and identify limitations of measurements in regards to accuracy, precision, and errors in measurement.
5. Use mathematics as one of the necessary tools to solve work-related problems.

III. COURSE SCOPE AND SEQUENCE

All units include the following student activities:

a. Watch unit video and solve video problem.
b. Read and discuss the unit text including examples.
c. Complete selected hands-on lab activities.
d. Work individually and in groups on selected problem exercises.
e. Review unit objectives and take the end-of-unit test.

Each unit features selected objectives listed below:

A. GETTING TO KNOW YOUR CALCULATOR-6 days

a. Enter whole numbers, fractions, and decimals into the calculator and read the display.
b. Use the parentheses keys.
c. Add, subtract, multiply, and divide fractions with a calculator.
d. Add, subtract, multiply, and divide mixed numbers with a calculator.
e. Add, subtract, multiply, and divide decimal fractions with a calculator.

B. NAMING NUMBERS IN DIFFERENT WAYS-6 days

a. Change percents to decimals.
b. Change decimals to percents.
c. Use a calculator to change fractions to decimals.
d. Use a calculator to change decimals to fractions.
e. Solve problems that contain fractions, decimals, or percents.

C. FINDING ANSWERS WITH YOUR CALCULATOR-6 days

a. Read a problem and begin to understand the situation.
b. Figure out what the problem is asking.
c. Decide what math operations are needed to solve a problem.
d. Use a calculator to work multi-step problems.

1. LEARNING PROBLEM-SOLVING TECHNIQUES-6 days

a. Read a problem and decide what is given and what is to be found.
b. Develop a plan for solving the problem.
c. Carry out the plan to solve the problem.
d. Check answers for reasonability.

2. ESTIMATING ANSWERS-6 days

   a. Make rough estimates.
   b. Round and truncate whole numbers to a given number of digits.
   c. Round and truncate decimal numbers to a given number of digits.
   d. Estimate answers to multiple-step problems.
   e. Check answers to problems for reasonability.

3. MEASURING IN ENGLISH AND METRIC UNITS-8 days

   a. Use common measurement units for length, area, volume, capacity, and weight in the English system.
   b. Use common measurement units for length, area, volume, capacity, and mass in the metric system.
   c. Convert measurement units from one form to another, and perform calculations that involve various measurement units.
   d. Read measurements taken with common measuring tools.
   e. Use tools to measure quantities, and solve problems that involve these measurements.

4. USING GRAPHS, CHARTS, AND TABLES-10 days

   a. Read tables.
   b. Read and draw bar graphs.
   c. Read circle graphs.
   d. Read and draw line graphs.
   e. Interpolate readings on a graph.
   f. Extend a line graph in order to estimate more values.

5. DEALING WITH DATA-6 days

   a. Recognize a problem that needs more data, and find a source for that data.
   b. Collect the data needed to solve a problem.
   c. Organize the data needed to solve a problem.
   d. Interpret or use data to solve problems.

6. WORKING WITH LINES AND ANGLES-6 days

   a. Name the different parts of lines, angles, and circles.
   b. Recognize parallel and perpendicular lines.
   c. Draw lines, angles, and circles.
   d. Measure line segments and angles.
   e. Draw lines and angles to produce parallel and perpendicular lines.
   f. Use geometric figures to solve work related problems.

7. WORKING WITH SHAPES IN TWO DIMENSIONS-10 days

   a. Identify common figures (such as rectangles, squares, triangles, parallelograms, trapezoids, and circles) within objects.
   b. Calculate the perimeter and area of common figures.
   c. Calculate the circumference and area of circles.
   d. Solve work-related problems that involve common figures.

8. WORKING WITH SHAPES IN THREE DIMENSIONS-10 days
    a. Identify cylinders, rectangular solids, cones, and spheres.
    b. Calculate surface area and volume for cylinders, rectangular solids, cones, and spheres.
    c. Solve problems that involve cylinders, rectangular solids, cones, and spheres.

9. USING RATIOS AND PROPORTIONS-10 days
    a. Read and interpret ratios.
    b. Compare ratios.
    c. Recognize and write proportions from given information.
    d. Distinguish between direct and indirect relationships.
    e. Solve proportions in practical, work-related problems.

10. WORKING WITH SCALE DRAWINGS-10 days
    a. Read and use the scale of a drawing.
    b. Find the dimensions of an object from a scale drawing.
    c. Find distances and direction on land maps.
    d. Make simple scale drawings.

11. USING SIGNED NUMBERS AND VECTORS-10 days
    a. Identify signed numbers.
    b. Find the absolute value of signed numbers.
    c. Combined signed numbers.
    d. Find the magnitude and direction of a vector.
    e. Solve problems using signed numbers and vectors.

12. USING SCIENTIFIC NOTATION-10 days
    a. Write large and small numbers in power-of-ten notation.
    b. Read and write numbers in scientific notation.
    c. Enter numbers written in scientific notation into a calculator and read answers in scientific notation displayed by a calculator.
    d. Combine numbers written in scientific notation to solve problems.

13. PRECISION, ACCURACY, AND TOLERANCE-10 days
    a. Distinguish between counting and measuring, and between precision and accuracy.
    b. Read and write measurements to show precision and tolerance.
    c. Compare measurements to specific tolerances.
    d. Use significant digits to indicate the accuracy of a measurement.
    e. Use precision tools to make measurements.
    f. Calculate with measurements and round the results.

14. SOLVING PROBLEMS WITH POWERS AND ROOTS-10 days
    a. Read and write numbers expressed as powers.
    b. Estimate the values of numbers written as powers.
    c. Read and write numbers expressed as roots.

    d. Find powers and roots of numbers using a calculator.
    e. Solve problems that involve numbers written as powers and roots.

15. USING FORMULAS TO SOLVE PROBLEMS-10 days

    a. Read and write a formula.
    b. Rearrange the parts of a formula to fit a problem.
    c. Substitute values into a formula and find an answer.
    d. Use a calculator to solve problems with formulas.

16. SOLVING PROBLEMS THAT INVOLVE LINEAR EQUATIONS-10 days

    a. Translate a problem into an equation.
    b. Recognize and work with the parts of an equation.
    c. Simplify and solve an equation.
    d. Check the solutions of the equation and the problem.

17. GRAPHING DATA-10 days

    a. Graph data as points on a coordinate system.
    b. Graph an equation.
    c. Find the slope of a graphed line.
    d. Find the intercepts of a graphed line.

18. SOLVING PROBLEMS THAT INVOLVE NONLINEAR EQUATIONS-10 days

    a. Recognize some nonlinear equations (involving squares,square roots, and reciprocals of a variable) and become familiar with their graphs.
    b. Solve a nonlinear equation, draw its graph, and check the result.
    c. Find pairs of values for a nonlinear formula in a stated problem, graph the formula, and read values from the graph.

19. WORKING WITH STATISTICS-10 days

    a. Distinguish between mean, mode, and median as measures of central tendency.
    b. Calculate the mean, mode, and median for a set of data.
    c. Draw a histogram to represent frequency distributions of data.
    d. Distinguish between range, trend, and standard deviation as measures of variability.
    e. Interpret the characteristics of a normal curve.
    f. Calculate the range and standard deviation to describe a set of data.

20. WORKING WITH PROBABILITIES-6 days

    a. Recognize a broad range of commonly used applications of probability.
    b. Solving application problems involving probability.
    c. Find probability of simple events via counting, diagrams, charts and formula.

21. USING RIGHT-TRIANGLE RELATIONSHIPS-6 days

a. Recognize some common uses of triangles such as support in construction, navigation, measurement.
b. Use the Pythagorean formula to find a side of a right triangle.
c. Solve application problems involving special right triangles, i.e., 3:4:5, 45 -45 , 30 -60 .
d. Solve application problems using the sine, cosine, and tangent ratios.

22. USING TRIGONOMETRIC FUNCTIONS

a. Find sine and cosine values.
b. Draw graphs of sine and cosine waves.
c. Find the amplitude, wavelength, and frequency of sine waves.
d. Find the phase shift between two sine waves.

IV. PROCEDURES FOR EVALUATION

a. Video problems completed by students.
b. Laboratory activities written by students.
c. Exercises completed by students.
d. Unit tests completed by students.
e. Semester exams completed by students.

APPLIED MATH PROFILE
State of Washington

Jack Ray, Project Coordinator

Goal- To pilot the Applied Math program for two years as a vocational supplement for those students who need a better understanding of math competencies.

Mission- To train local district personnel in the Applied Math program, funding vocationally certified Applied Math programs, and evaluating the impact of vocational students who have completed the Applied Math curriculum.

Term- Applied Math will be piloted on a two year basis, funded vocationally where there is a certified vocational instructor who has completed a thirty (30) hour workshop on Applied Math. Funding is based upon FTE criteria:

150 + FTE's	-	Maximum of two vocationally funded classes.
Less 150 FTE's	-	One class vocationally fundable.

*Class size limited to no more than 25 students.

Application- Acceptance into the Washington Applied Math project is based upon completion of the application form and agreeing to designated assuraance statements. Attach advisory committee minutes of their approval of entering into the Applied Math pilot.

Evaluation- Unit evaluations are to be completed and returned to OSPI. An End-of-the-Year evaluation by district administrator in charge of Applied Math is to be completed and returned to OSPI.
At the end of the two year pilot, a select committee of Applied Math participants will be called together to

determine future invovlement in Applied Math. At the end of the two year period., vocational funding is no longer given unless the determination is made by OSPI (in conjunction with Applied Math committee).

If the determination is made to continue the Applied Math program (other than in a pilot status), districts will be required to submit a New Course Proposal to OSPI.

Workshops- Applied Math workshops will be offered during the summers of 1988 and 1989. These workshops will be for a minimum of thirty (30) vocational clock hours and college credit will be available through Seattle Pacific University.

Interim one day workshops will be offered throughout the school year to network Washington programs.

District/Programs- 24 districts; 49 teachers in 1988 - 89
34 districts: 48 teachers in 1989 - 90

*Three districts who submitted application, did not implement the program.

APPLIED MATH ADMINISTRATIVE EVALUATION

Applied Math Pilot Project 1988 - '89
State of Washington

Superintendent of Public Instruction's Office
Old Capitol Bldg. FG - 11
Olympia, WA 98504

Jack Ray, Project Director

Please complete this evaluation of your district's Applied Math pilot(s). Return the completed evaluation to the above address by **May 22, 1989.** Applied Math instructors will complete a similar evaluation except with emphasis on student progress. Thank you.

District: ____

Applied Math Administrator: ____________________________

Name(s) of Instructors: ________________________________

____

Name(s) of school involved: ____________________________

____

Number of students enrolled in A.M. (total): ___________

Do you/district feel the Applied Math program was beneficial for students: yes ____; no ____; or comment: ____________________

____

Do you/district feel the training offered during the year was benefical to instructors: yes ____; no ____; or comment: __________

____

Do you/district feel this course should be a part of the vocational sequence: yes ____; no ____; or comment: ____________________

____

Do you/district feel this course should be a team taught program for maximum benefit: yes ____; no ____; or comment: ______________

____

Do you/district feel that the voc ed dollars generated through Applied Math FTE's, was sufficient to merit offering the course: yes ____; no ____; or comment: ______________________________

____

Do you/district plan to continue the pilot project for 1989 - '90: yes ____; no ____; or comment: ______________________________

____

Do you/district plan to utilize the same instructors: yes ____; no ____.

Did you/district meet the assurance statements on the application form provided to SPI: yes ____; no ____.

APPLIED MATH EVALUATION & INFORMATION FORM

Sample

NAME ______________________ DISTRICT ______________________

Please read the information below and answer all areas to the best of your ability. If you feel an area is not applicable, please show an "N/A" rather than leave it blank. Also, any comments you wish to make regarding the unit(s) would be helpful Thanks.

- -

1. Which unit does this form pertain to? (circle one)

   A, B, C, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,

   11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22

2. Rate the unit's quality: (1 - 10, 10 being highest)

   Teacher Text: 1 2 3 4 5 6 7 8 9 10
   Student Text: 1 2 3 4 5 6 7 8 9 10
   Lab Activities: 1 2 3 4 5 6 7 8 9 10
   Video: 1 2 3 4 5 6 7 8 9 10

   Comments: ____

   ____

   ____

3. Rate the students' response to:
   Student Text: 1 2 3 4 5 6 7 8 9 10
   Lab Activities: 1 2 3 4 5 6 7 8 9 10
   Video: 1 2 3 4 5 6 7 8 9 10

   Comments: ____

   ____

   ____

4. What do you perceive as the strengths of this unit? __________

   ____

   ____

5. What do you perceive as the weaknesses of this unit? __________

   ____

   ____

6. Rate the students' improvement after having taken this Applied Math unit:
   1 2 3 4 5 6 7 8 9 10

7. Other comments: ____

   ____ (you may add more on the back side)

NAME Master Tally DISTRICT

Please read the information below and answer all areas to the best of your ability. If you feel an area is not applicable, please show an "N/A" rather than leave it blank. Also, any comments you wish to make regarding the unit(s) would be helpful. Thanks.

- -

1. Which unit does this form pertain to? (circle one)

11 - [✓ A], B, C, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,
11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22

2. Rate the unit's quality: (1 - 10, 10 being highest)

Teacher Text: [✓ 1] 2 3 4 [✓ 5] [✓ 6] 7 [✓ 8] 9 [✓ 10]
Student Text: 1 2 3 4 [✓ 5] 6 [✓ 7] [✓ 8] [✓ 9] [✓ 10]
Lab Activities: 1 2 [✓ 3] 4 5 [✓ 6] [✓ 7] [✓ 8] [✓ 9] [✓ 10]
Video: 1 2 3 4 [✓ 5] [✓ 6] [✓ 7] [✓ 8] [✓ 9] [✓ 10]

Comments: * Late Arrival from Card / * Tchr TEXT NOT SET up For easy Ref. Video & Act Great / 1st video prob. a little too involved / Need SETS OF Problems For HMWK / TAKES TOO Long to GO Through Some OF THE Simple INFO. Tchr TEXT is Almost impossible TO USE

3. Rate the students' response to:

Student Text: 1 2 3 4 [✓ 5] [✓ 6] [✓ 7] 8 [✓ 9] 10
Lab Activities: 1 [✓ 2] 3 4 5 [✓ 6] [✓ 7] 8 [✓ 9] [✓ 10]
Video: 1 2 3 4 [✓ 5] 6 [✓ 7] [✓ 8] [✓ 9] [✓ 10]

Comments: Students Like Labs / Students NOT very INTERESTED AT First / Jump into too difficult material For Lower Students & TOO much time on basic For better Students / Lab Activity NOT TOO realistic

4. What do you perceive as the strengths of this unit? Good Instructions w/ TEXT *** Good Labs & Equip / Video & Activities Related TO Trade / Looking AT concepts they will be using / Calculators /

5. What do you perceive as the weaknesses of this unit? Terminology - more Vocab Needed / NOT ENOUGH prob IN Auto Area / Lab Activities - but CAN easily be rewritten / USE Calc w/ Fraction Key / Spend more Time Prob. Solving.

6. Rate the students' improvement after having taken this Applied Math unit:
1 2 3 [✓ 4] 5 6 [✓ 7] [✓ 8] [✓ 9] 10

7. Other comments: Students Like Approach / Calc is Key TO Course

(you may add more on the back side)

APPLIED MATH EVALUATION & INFORMATION FORM

NAME Master Tally DISTRICT

Please read the information below and answer all areas to the best of your ability. If you feel an area is not applicable, please show an "N/A" rather than leave it blank. Also, any comments you wish to make regarding the unit(s) would be helpful. Thanks.

- -

1. Which unit does this form pertain to? (circle one)

7- A, [✓ B] C, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,

11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22

2. Rate the unit's quality: (1 - 10, 10 being highest)

Teacher Text:	1 ~~2~~ 3 4 ~~5~~ 6 ~~7~~ ~~8~~ ~~9~~ 10
Student Text:	1 2 3 4 5 ~~6~~ 7 ~~8~~ ~~9~~ ~~10~~
Lab Activities:	1 2 3 ~~4~~ ~~5~~ 6 7 8 ~~9~~ ~~10~~
Video:	1 2 3 4 5 ~~6~~ ~~7~~ ~~8~~ ~~9~~ 10

Comments: Late Arrival / Wkbook not set up Concurrently

Break down to easier parts / Ask for percentages in steps

You have to do too much Flip flopping between Tchr & student text.

3. Rate the students' response to:

Student Text:	1 2 3 4 ~~5~~ ~~6~~ ~~7~~ ~~8~~ ~~9~~ 10
Lab Activities:	1 2 ~~3~~ ~~4~~ 5 6 ~~7~~ ~~8~~ 9 ~~10~~
Video:	1 2 3 4 ~~5~~ ~~6~~ ~~7~~ ~~8~~ ~~9~~ 10

Comments: Students Liked Labs (*They Liked the Popcorn) / Class has become a "dumping" ground

4. What do you perceive as the strengths of this unit? Good instructions

** Good Labs

5. What do you perceive as the weaknesses of this unit? Terminology / Tchr text / Labs too difficult at this stage / Could be incorporated into 2 books / Students need some entry level to have success

6. Rate the students' improvement after having taken this Applied Math unit:

~~1~~ 2 ~~3~~ 4 ~~5~~ 6 ~~7~~ 8 ~~9~~ 10

7. Other comments: *Students need a lot of skill work / Level of the student is the key

(you may add more on the back side)

APPLIED MATH EVALUATION & INFORMATION FORM

NAME Master Taily DISTRICT ____________

Please read the information below and answer all areas to the best of your ability. If you feel an area is not applicable, please show an "N/A" rather than leave it blank. Also, any comments you wish to make regarding the unit(s) would be helpful. Thanks.

- -

1. Which unit does this form pertain to? (circle one)

5- A, B, [✓ C] 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,

11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22

2. Rate the unit's quality: (1 - 10, 10 being highest)

Teacher Text: 1 2 3 4 [✓ 5] [✓ 6] [✓ 7] [✓ 8] 9 10
Student Text: 1 2 3 4 [✓ 5] [✓ 6] 7 [✓ 8] 9 10
Lab Activities: 1 2 3 4 5 [✓ 6] [✓ 7] 8 9 [✓ 10]
Video: 1 2 3 4 [✓ 5] 6 7 [✓ 8] [✓ 9] 10

Comments: Tchr & Student book pages are different / video's are very good / need sets of probs for Hmwk

3. Rate the students' response to:

Student Text: 1 2 3 4 [✓ 5] [✓ 6] [✓ 7] 8 9 10
Lab Activities: 1 2 3 4 5 6 [✓ 7] [✓ 8] [✓ 9] 10
Video: 1 2 3 4 5 [✓ 6] 7 [✓ 8] [✓ 9] 10

Comments: Map Activity pretty good / A,B,C units may be incorp into 2 books

4. What do you perceive as the strengths of this unit? ____________

5. What do you perceive as the weaknesses of this unit? Some Questions in Student Manual not clear / Book sizes are too small to check out to kids - yet should be used for home assignments once in a while

6. Rate the students' improvement after having taken this Applied Math unit:

1 [✓ 2] 3 4 5 [✓ 6] 7 8 9 10

7. Other comments: Students are more comfortable w/ Calc but still need more wk

(you may add more on the back side)

Applied Mathematics

UNIT A: "GETTING TO KNOW YOUR CALCULATOR"

STUDENT ATTITUDE QUESTIONNAIRE

(N = 355 Students)

STUDENT NUMBER ______________ (Ask your teacher if you don't know.)

---

1. Overall, did you like this unit?

ERCENT

26 Yes, a lot.
47 Yes, a little.
18 No, not very much.
9 No, not at all.

2. Which part of this unit did you like the most? (Choose one.)

6 Written materials
31 Math lab activity
23 No preference
29 Video program
13 Problem-solving exercises

3. Which part of this unit did you like the least? (Choose one.)

33 Written materials
8 Math lab activity
27 No preference
8 Video program
26 Problem-solving exercises

4. Overall, was the material covered in this unit difficult for you to understand?

5 Yes, most of the material was difficult to understand.
42 Yes, some of the material was difficult to understand.
51 No, most of the material was not difficult for me to understand.

5. Which of the parts was the most difficult for you to understand? (Choose one.)

20 Written materials
10 Math lab activity
33 No preference
4 Video program
32 Problem-solving exercises

6. Which of the parts was the least difficult for you to understand? (Choose one.)

11 Written materials
23 Math lab activity
22 No preference
34 Video program
12 Problem-solving exercises

7. Do you think the mathematics covered in this unit is important for you to understand?

26 Yes, very important.
56 Yes, important.
14 No, not very important.
3 No, not at all important.

8. Do you enjoy using the calculator as part of learning about mathematics?
56 Yes, a lot.
35 Yes, a little.
4 No, not very much.
3 No, not at all.

9. Now that you've finished this unit, do you feel more confident about your ability to learn mathematics?
19 Yes, a lot.
55 Yes, a little.
17 No, not very much.
5 No, not at all.

10. Did you spend any time reading the assignments outside of class?
14 Yes, about 30 minutes per assignment.
8 Yes, about an hour per assignment.
59 No, I did all the reading in class.
19 No, I did not read the material.

11. Did you spend any time solving the problem-exercises as part of homework—outside of class?
16 Yes, about 30 minutes in all.
8 Yes, about an hour in all.
5 Yes, over an hour.
70 No, I worked on the problems in class.

Oregon Occupational Information
Coordinating Committee
875 Union Street NE
Salem, OR 97311

April 10, 1989

MICRO-OIS: A NEW TOOL FOR HUMAN RESOURCE PROGRAMS

Meeting the needs of students or clients and of the labor market are twin goals of many educational and human resource development programs. Oregon now has a microcomputer based tool to assist administrators and planners of education and training programs examine state and local labor market needs. Micro-OIS (Occupational Information System) matches occupational demand data with the output of education and training programs to assess the demand/supply relationship for these occupational categories.

Micro-OIS has a data base of over 700 Oregon occupations and relates them to approximately 175 national and state level education and training program areas. Data on the number of course completers from high school and community college vocational education, colleges and universities, private vocational schools, Job Training Partnership, Vocational Rehabilitation and Corrections programs are included in this data system. Also, Employment Division activity representing job applicants, job openings and wage information is displayed in Micro-OIS.

Occupational demand is shown by estimating current and projected employment, projecting the number of new openings due to industry growth and replacement needs and comparing these data to an estimate of the number of unemployed workers by occupation. Demand data for these occupations are developed annually by the Employment Division's Research and Statistics staff for the state and for 14 local regions within the state.

Another feature is the "Occupations by Industry" module. This module allows the user to determine which industries employ a particular occupation statewide or locally. One of the most useful applications of this module is in job development or placement. It can help job developers learn of placement sites that they may never have considered and thereby increase a student or client's chances of finding a job related to their aptitudes, interests, and training.

Micro-OIS runs on an IBM or compatible microcomputer with hard disk storage. It presently requires dBase III or dBase III Plus software, but staff are preparing a compiled version that will not need dBase to run. There is no cost to public education or Job Training Partnernship programs for the Micro-OIS software. A user's manual, installation instructions and cross-reference materials are included in the package.

For more information on Micro-OIS, contact David Allen, Coordinator, Occupational Information Unit, Employment Division, 875 Union Street NE, Salem, OR 97311. Telephone 378-6400 or (800) 237-3710.

1098j

09/01/89
OREGON OCCUPATIONAL INFORMATION SYSTEM
DEMAND/SUPPLY REPORT

OREGON STATEWIDE
CIP TITLE: SECRETARIAL

CAREER CLUSTER: 006
CIP CODE: 07060600

--- OES --- TITLE	OES CODE	1989 EMPL	1994 EMPL	(EST. ANNUAL 1989-94) GROWTH	REPLAC	OPEN	1988 UNEMP
LEGAL SECRETARIES	43155102	3229	3500	54	83	137	200
MEDICAL SECRETARIES	43155105	1717	1894	35	45	80	81
OTHER SECRETARIES	43155199	27257	29378	424	702	1126	1347
TOTALS		32203	34772	513	830	1343	1628

09/01/89
OREGON OCCUPATIONAL INFORMATION SYSTEM
1987 STATEWIDE EDUCATIONAL SUPPLY REPORT

AREA: STATEWIDE
CIP TITLE: SECRETARIAL

CAREER CLUSTER: 006
CIP CODE: 07060600

--- CIP --- TITLE	CIP CODE	COMM. COLL	4-YR. COLL	CORR DIV	PRIV V ED	HIGH SCH	VOC REHAB	JTPA	APPR
SECRETARIAL	07060600	242			160		7	106	
TOTALS		242			160		7	106	

09/01/89
OREGON OCCUPATIONAL INFORMATION SYSTEM
EMPLOYMENT DIVISION ACTIVITIES REPORT
7-1-87 TO 6-30-88

OREGON STATEWIDE
CIP TITLE: SECRETARIAL

CAREER CLUSTER: 006
CIP CODE: 07060600

DOT CODE	--- DOT --- TITLE	E.S. APPS	E.S. OPEN	RATIO APPS/OPEN	AVG HOURLY WAGE OFFERED
201162010	SOCIAL SECRETARY	7	7	1.10	5.06
201362010	LEGAL SECRETARY	306	202	1.60	6.03
201362014	MEDICAL SECRETARY	123	33	3.80	6.01
201362018	MEMBERSHIP SECRETARY	3	1	3.00	6.92
201362022	SCHOOL SECRETARY	9	5	1.90	5.92
201362030	SECRETARY	2036	596	3.50	5.75

09/01/89
OREGON OCCUPATIONAL INFORMATION SYSTEM
DEMAND/SUPPLY REPORT

DIST 10 CAREER CLUSTER: 010
CIP TITLE: ELECTRONIC TECHNOLOGY CIP CODE: 15030300

--- OES --- TITLE	OES CODE	1989 EMPL	1994 EMPL	(EST. ANNUAL 1989-94) GROWTH	REPLAC	OPEN	1988 UNEMP
ELECTRICAL/ELECTRONIC ENGINE	21122126	48	57	2	1	3	2
ELECTRIC & ELECTRONIC ENG TE	21322505	72	85	2	1	3	4
TOTALS		120	142	4	2	6	6

09/01/89
OREGON OCCUPATIONAL INFORMATION SYSTEM
1987 STATEWIDE EDUCATIONAL SUPPLY REPORT

AREA: STATEWIDE CAREER CLUSTER: 010
CIP TITLE: ELECTRONIC TECHNOLOGY CIP CODE: 15030300

--- CIP --- TITLE	CIP CODE	COMM. COLL	4-YR. COLL	CORR DIV	PRIV V ED	HIGH SCH	VOC REHAB	JTPA	APPR
ELECTRONIC TECHNOLOGY	15030300	531	296				2	81	
TOTALS		531	296				2	81	

09/01/89
OREGON OCCUPATIONAL INFORMATION SYSTEM
EMPLOYMENT DIVISION ACTIVITIES REPORT

DIST 10 7-1-87 TO 6-30-88 CAREER CLUSTER: 010
CIP TITLE: ELECTRONIC TECHNOLOGY CIP CODE: 15030300

DOT CODE	--- DOT --- TITLE	E.S. APPS	E.S. OPEN	RATIO APPS/OPEN	AVG HOURLY WAGE OFFERED
003061010	ELECTRICAL ENGINEER	0	1	0.10	16.73
003061030	ELECTRONICS ENGINEER	2	2	1.10	17.55
003161010	ELECTRICAL TECHNICIAN	0	1	0.10	5.50
003161014	ELECTRONICS TECHNICIAN	7	3	2.40	4.63

OREGON OCCUPATIONAL INFORMATION SYSTEM

DIST 10

OCCUPATIONS BY INDUSTRY REPORT

CIP TITLE: ELECTRONIC TECHNOLOGY   OREGON CIP CODE: 15030300

OES TITLE: ELECTRICAL/ELECTRONIC ENGINE   OREGON OES CODE: 21122126

(Employment Level = 48)

- SIC - CODE	-- STANDARD INDUSTRIAL CLASSIFICATION (SIC) TITLE -	PERCENT OF OES EMPLOYMENT
367	ELECTRONIC COMPONENTS AND ACCESSORIES	13.95%
382	MEASURING AND CONTROLLING INSTRUMENTS	37.20%
491	ELECTRIC COMPANIES AND SYSTEMS	9.30%
737	COMPUTER AND DATA PROCESSING SERVICES	6.97%
891	ENGINEERING,ARCHITECT.,SURVEYING SERVICE	4.65%
999	FEDERAL GOVERNMENT, NEC	9.30%

OES TITLE: ELECTRIC & ELECTRONIC ENG TE   OREGON OES CODE: 21322505

(Employment Level = 72)

- SIC - CODE	-- STANDARD INDUSTRIAL CLASSIFICATION (SIC) TITLE -	PERCENT OF OES EMPLOYMENT
367	ELECTRONIC COMPONENTS AND ACCESSORIES	15.38%
382	MEASURING AND CONTROLLING INSTRUMENTS	36.92%
481	TELEPHONE COMMUNICATION	9.23%
489	COMMUNICATION SERVICES, N.E.C.	3.07%
492	GAS COMPANIES AND SYSTEMS	12.30%
506	ELECTRICAL GOODS	3.07%
999	FEDERAL GOVERNMENT, NEC	15.38%

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THE OCCUPATIONAL ARTICULATION DATABASE

A System for Managing the Articulation Process

Greg Harpole
Downtown Business Education Center
Lane Community College
Eugene, OR

Northwest Conference on
Competency-Based Vocational Education

October 18-20, 1989

Inn of the 7th Mountain
Bend, Oregon

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PREFACE

For many years, secondary and postsecondary schools have used occupational advisory committees to assist in the development and improvement of vocational curriculums. Often teachers and advisory committee members are unaware of the task lists and other tools available to them through the: Vocational-Technical Educational Consortium of States, Michigan Occupational Data Analysis System, Bureau of Labor Statistics, departments of education, and professional organizations. The lack of knowledge of, or possibly the unwillingness to use the available tools often makes curriculum development and updating a slow process, often too slow for the expectations of business and industry.

Over the past few years, the word "articulation" has become synonymous with the student transition between the postsecondary and secondary levels. The transition is often based on a comparison of the tasks/competencies taught at the secondary level and how they relate to the postsecondary curriculum. Articulation agreements between most schools are often tied to the existing partially updated curriculum, not competency based validated curriculums.

INTRODUCTION

The Occupational Articulation Project looks at articulation in a broader perspective, taking into consideration not only the secondary/postsecondary connection but also the connection between the schools and the business community. The Occupational Articulation model includes business and industry as a major component of the traditional 2+2 articulation model.

The Occupational Articulation Project identifies a loop to enhance vocational curriculums and encourage articulation. This loop includes the following steps:

1. Business and industry work with education to develop a comprehensive task list for specific vocational careers.

2. Secondary and postsecondary institutions utilize the comprehensive task list to improve and develop the vocational curriculum.

3. Educational levels cooperate to provide and articulate task/competency based training.

4. Business and industry reenter the process to evaluate the vocational students and to revise and update their expectations.

The Occupational Articulation Project combines the curriculum development and articulation processes into a single system that encourages both curriculum development and articulation as a part of a comprehensive process.

Business and Industry
As Task Identified and Validator

Business and Industry as
Student/Employee Evaluator

Curriculum Development in the
Secondary and Postsecondary
Vocational Curriculums

Task Articulation Between Secondary and Postsecondary Schools Based on Validated Tasks

The involvement of business and industry in identifying the tasks needed for job success provides the key to an effective vocational curriculum. The development of comprehensive task lists provides the common thread by which curriculums at all levels can be evaluated, improved and articulated.

DEVELOPMENT OF THE OCCUPATIONAL ARTICULATION PROJECT

The Occupational Articulation Project, as developed through the Lane County Vocational Education Consortium, utilizes a comprehensive, validated task list for office systems and accounting careers, and a software package designed and copyrighted by John Hughes. The implementation of the system included the following steps:

I. Cooperative venture by local schools and business and industry to identify careers to be included in the project.

II. Identification of existing industry standard task lists and preparation for validation.

III. Validation of industry standard task list and performance guides by local business and industry representatives.

IV. Review of validated task list by area teachers to identify pre-tasks (tasks necessary to bring student competence to levels indicated in industry standard tasks).

V. Classification of validated tasks for specific careers by business and industry representatives.

VI. Entry of task list, performance guides, and career data into the 2+2 Occupational Articulation Database software.

VII. Entry of tasks by course and program by secondary and postsecondary instructors

VIII. Inservice for teachers on how to utilize the software for curriculum improvement, career counseling, and articulation.

IX. Identification of task revalidation schedule for continuous revalidation of tasks and performance guides.

USING THE OCCUPATIONAL ARTICULATION PROJECT SOFTWARE

Once the Occupational Articulation Project has been implemented, the software can be utilized in a number of different ways. Listed below is a part of a draft utilized for the field-testing of the software in four Lane County high schools.

2+2 DATABASE FOR HIGH SCHOOL CURRICULUM DEVELOPMENT

The 2+2 Database Software can be used as a curriculum development tool to: increase the community college credits available to high school students, identify the core skills, and identify careers that are appropriate for graduates of the high school program.

2+2 Database to Increase Community College Credits

By comparing the specific high school courses to the community college curriculum, the high school instructor may identify the percentage of match between the high school courses and the community college courses. To complete this step, select the following option:

```
MAIN MENU/\2 Compare COurses
    Compare Courses Menu/\2 Specific High School Courses
            HS Courses Menu/\2 All Community College Courses
```

By reviewing the percentage of match for each of the community college courses, the instructor will be able to identify the courses with the highest match percentages and therefore those courses for which the students could receive credit with minor curriculum revision. To identify the specific tasks that would need to be added to a curriculum to provide the additional community college credit:

1. Select the following option:

```
MAIN MENU/\2 Compare COurses
    Compare Courses Menu/\2 Specific High School Courses
            HS Courses Menu/\1 Specific Community College Courses
```

2. Use the high school courses pick window to identify the high school courses to be compared to a specific community college course.

3. Use the community college course pick window to identify the specific community college course to be compared.

4. Print the output which will include both the tasks that compare and those that do not compare.

5. Use the list of tasks that DO NOT COMPARE to determine the tasks that would need to be added to the high school curriculum for students to receive community college credit.

6. Repeat the procedure above for other community college courses which identified a high percentage of match with the high school courses.

7. If appropriate, make changes to high school course curriculum to incorporate DO NOT COMPARE tasks.

8. If changes are made, utilize high school supervisor access code to make appropriate changes in 2+2 data files.

2+2 Database for Identifying Core Skills

The 2+2 Database Software can be used to determine the core skills necessary for office systems and accounting careers. Appendix II of the Office Systems/Accounting Task Catalog identifies each of the tasks in the 2+2 database and the careers that require the specific task. By reviewing this appendix for the career(s) for which you are training students, you will be able to determine the core skills that need to be included in your program.

The core skills data can also be helpful in identifying the scope and sequence for your courses. Tasks required in all or most of your selected careers may be incorporated into classes that all students are required to take while tasks required in only a few careers may be included in specialized courses.

Utilize the 5 List Database Option 2 By Task for a list of the careers that require a specific task or group of tasks.

2+2 Database to Identify Careers for Training

One of the most difficult parts of developing a curriculum is determining what skills are needed for students to succeed in a specific career. To get a feel for how a high school curriculum compares to a specific career, select 3 Compare Careers from the MAIN MENU. By comparing the high school curriculum or specific high school courses to a specific career, it is possible to determine not only the percentage of match but also the tasks that compare and do not compare. This will provide the instructor with information to decide if tasks that do not compare can be added to the curriculum, to provide the students with the job entry skills for the specific career.

The Compare Careers option also makes it easy to identify the specific careers for which you want to train your students. By utilizing employment data for the local area and the comparison of the current curriculum to a specific career, this should allow the instructors to identify careers for which they have the ability to train their students.

2+2 Database for Career Counseling

The 2+2 Database Software can be easily utilized as a career counseling tool for high school and community college students. Through the use of the software, a teacher or counselor can demonstrate the following to students:

1. Tasks The specific tasks that are taught within a specific high school or community college course.

2. Careers The specific tasks that the student must be able to do in order to succeed in a specific career.

3. Compare Courses to a Career The specific courses a student has taken or is planning to take, can be compared to a specific career to identify the percentage of match as well as the tasks they have learned and will need to learn.

4. Compare High School Courses to Community College Courses To identify the level of community college credit a high school student could receive, the specific courses a high school student has taken, or plans to take, can be compared to the community college curriculum. The student will be able to see a list of community college classes for which they could receive credit.

5. 2+2 Program The 2+2 Program option can be used to map a program for a high school student to follow from grades 9-14 for a specific community college program.

2+2 Database for Articulation

To utilize the 2+2 Database for articulation between the high school and community college level, two options would need to be selected: Compare Courses and 2+2 Program. The Compare Courses option allows the software user to compare a specific high school course or courses to a community college course or courses. This option identifies the level of task match between the high school and community college curriculums. Once the courses have been compared, 4 2+2 Program can be selected from the MAIN MENU. This will provide the high school student with the specific vocational curriculum they should follow from grade 9 in high school through grade 14 at the end of a two year community college curriculum.

THE 2 + 2 OCCUPATIONAL ARTICULATION DATABASE SOFTWARE

First of Three Software Packages Planned

The 2+2 Occupational Articulation Database is the first of three software packages that support the concepts of occupational articulation:

2+2 Occupational Articulation Database The 2+2 Occupational Articulation Database software has been written to focus on curriculum development, career counseling, and articulation between educational levels. This software uses validated tasks to compare courses, programs, and careers, to develop and improve curriculums, and to provide career counseling for students. This package also is able to compare the tasks identified for secondary and postsecondary courses, to provide an avenue for articulation through a printed 2+2 curriculum.

Student Profile Database The second Occupational Articulation Database is presently in the design stage. The task, course, program, and career files used in the 2+2 Database will also be utilized within Student Profile Database. The main function for this software package will allow recordkeeping for individual students by secondary and postsecondary courses taken and by specific tasks completed. Instructors will be able to keep an ongoing record of the tasks learned by a specific student by entering courses taken (which automatically toggles the tasks taught in the course) or by entering the specific tasks that are learned or not learned. Data for specific students may then be compared to specific postsecondary courses, programs, and careers to identify the appropriate articulation. A printed student task profile will be available to identify specific tasks learned by the student.

Note: Upon the completion of the third software package, the Student Profile Database will allow criterion reference test items to serve as a way in which tasks can be toggled.

Criterion Referenced Test Database The third software package in the Occupational Articulation Database series will utilize criterion referenced test items for tasks within the database. This database will utilize the task, course, program, and career data identified for the 2+2 Occupational Articulation Database. The package will make it possible to create criterion referenced tests for all or part of a course, program, or career. It will be possible to generate tests for specific students either on paper or as a computer administered test. Results of the tests can be easily exported to the Student Profile Database to toggle tasks learned.

SPECIFICS OF THE 2+2 OCCUPATIONAL ARTICULATION DATABASE

Equipment Needed

2 + 2 Database runs on the IBM PC Computer or close compatible with:

- o 352K or more RAM memory
- o Two double-sided diskette drives
  or
  At least one double-sided diskette drive and a fixed disk
- o DOS version 2.xx or 3.xx
- o Monochrome, Color, or Gray Scale Monitor

The 2+2 Database Software has been tested and found that it works correctly on the IBM PC, PC-XT, PC-AT, PS-2, and most close compatible systems.

Site License for 2+2 Occupational Articulation Database

The purchase of a site license for the 2+2 Occupational Articulation Database allows:

1. The software to be used by the postsecondary institution, satellite campuses of the institution and secondary schools in the area.

2. An unlimited number of copies of the software can be made for the postsecondary institution, satellite campuses, and area secondary schools.

3. The software program can be used as the platform for individual databases for any vocational or other department within the post secondary institution.

Features of the Software

- Task, course, career, and program data can be entered directly into the software.

- Access codes for various classifications of users assure that the integrity of the data is maintained. Data can not be altered unless the appropriate access code is utilized.

- Secondary and postsecondary instructors can easily update the data entered for courses and programs.

- Software is User Friendly

    - Overlay menus so user can see where they are in the software at all times

    - Help screens available for all menu choices and options

    - Dialogue windows and pop-up windows make it easy to select course, program, and career data needed

    - Function key assignments applicable to a specific menu are shown at the base of the screen

    - All reports can be output to the screen, printer, or to a disk file

- Software file structure makes it possible for the software to be used for:

    - Tasks lists with up to 1500 tasks per list

    - Performance guides for each task

- -- Up to 128 different careers per task list
- -- No limit on the number of secondary schools
- -- Up to 128 different courses per secondary school
- -- No limit on the number of postsecondary school departments
- -- Up to 128 different courses per postsecondary school department

o Software currently being field tested in Lane, Deschutes and Clackamas Counties.

o Site license purchased for Oregon schools which provides a 50% discount on fees per educational service district, community college district, or vocational education consortium.

For more information about the Occupational Articulation Project contact:

Greg Harpole
Downtown Business Education Center
Lane Community College
1059 Willamette
Eugene, OR 97401
503-726-2251

For information about the 2+2 Occupational Articulation Software contact:

Sandra Hamill
Answerable Style Software
2456 Onyx
Eugene, OR 97401

SAMPLE DATA

Appendix I list the menus within the 2+2 Occupational Articulation Database software and a sample of the output for each option. The community college data included in the examples is real, data listed as Churchill High School is a compilation of course and task data for several high schools that have been involved in the field testing of the software.

ARTICULATION AGREEMENT

Appendix II provides a copy of the agreement being utilized between Lane Community College and the 20 LCC Service District high schools to manage the use of the 2+2 Occupational Articulation Database for articulation.

APPENDIX I

THE 2+2 OCCUPATIONAL ARTICULATION DATABASE

SAMPLE MENUS AND DATA

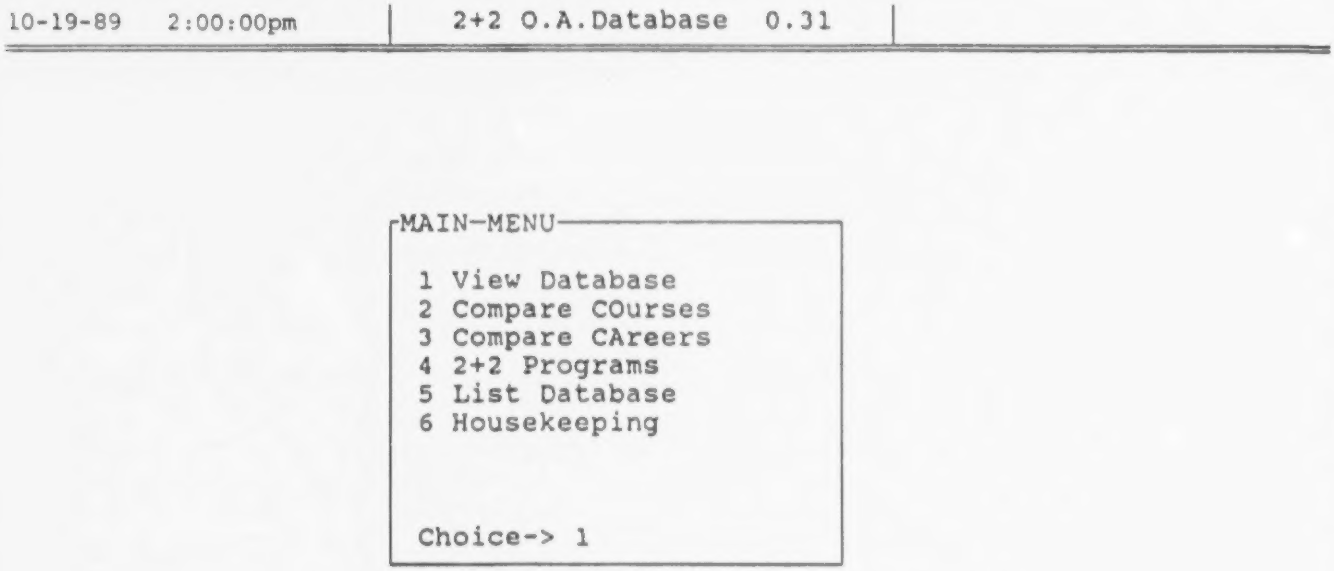
The following pages provide copies of the menus utilized within the 2+2 Occupational Articulation Database Software, an explanation of the functions for each menu selection, and an example of the screen or output for each menu selection.

The numbers appearing on the left side of each entry identify the number of the selection from the main menu and from the sub-menus within the main menu choice.

Example: 5.1.2 indicates
MAIN MENU Selection 5 List Database
LIST DATABASE Sub-menu Selection 1 Tasks
LIST TASKS Sub-menu Selection 2 By HS Curriculum

MAIN MENU

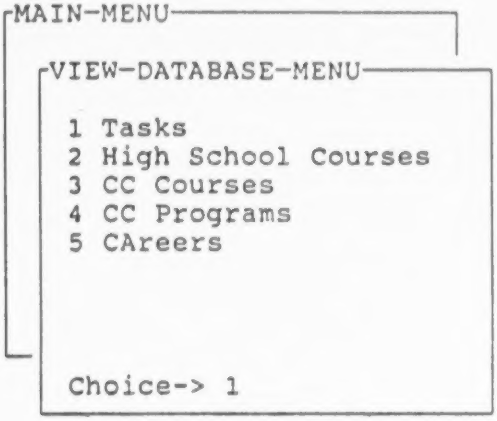
Once the user has logged onto the computer and accessed the 2+2 OA Database Software, the following menu will appear on the screen to allow the user to identify their MAIN MENU selection. The MAIN MENU identifies the primary options for using the 2+2 Software.



```
10-19-89   2:00:00pm   |   2+2 O.A.Database  0.31   |

                  MAIN-MENU

                   1 View Database
                   2 Compare COurses
                   3 Compare CAreers
                   4 2+2 Programs
                   5 List Database
                   6 Housekeeping


                   Choice-> 1
```

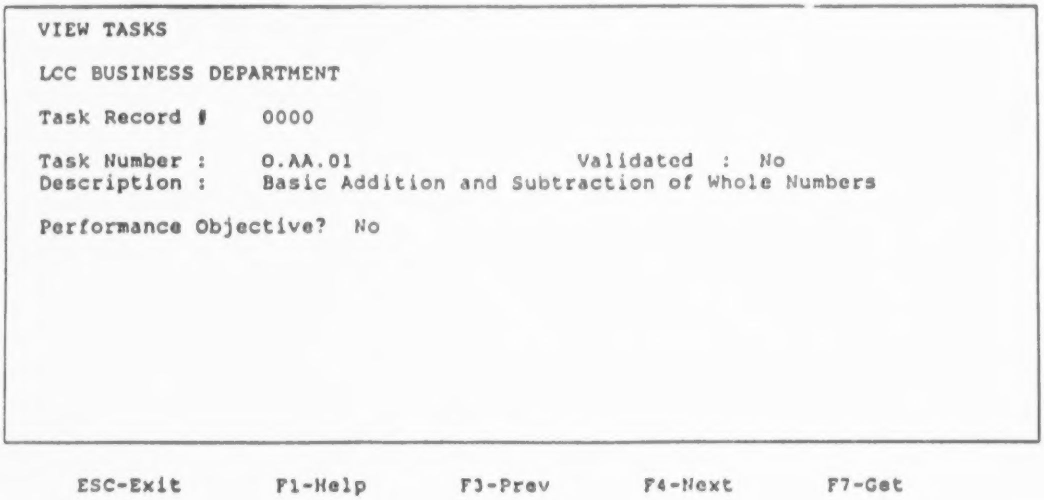
MAIN MENU SELECTION 1 VIEW DATABASE

1 <u>VIEW DATABASE</u> Allows for the viewing of database information by basic users and the entry of database information by users with special access codes. Option includes: list of tasks in database, tasks for high school courses, tasks for community college courses, tasks for business careers, and courses for community college programs.



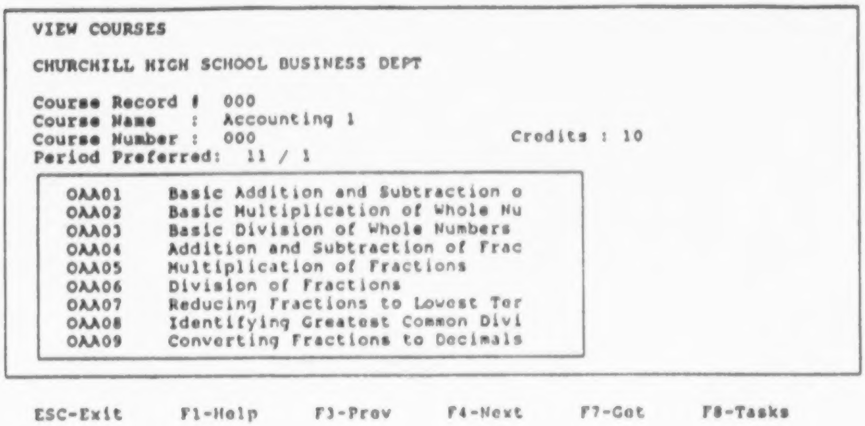
```
MAIN-MENU
  VIEW-DATABASE-MENU

   1 Tasks
   2 High School Courses
   3 CC Courses
   4 CC Programs
   5 CAreers

   Choice-> 1
```

1.1 <u>TASKS</u> Lists the tasks that are identified within the database task number/description, validation status, and if a performance objective is available.



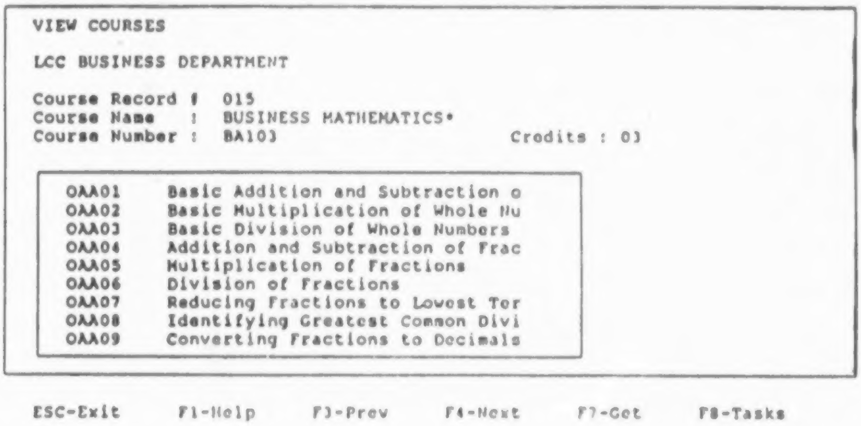
```
VIEW TASKS

LCC BUSINESS DEPARTMENT

Task Record #    0000

Task Number :    0.AA.01                  Validated  :  No
Description :    Basic Addition and Subtraction of Whole Numbers

Performance Objective?  No

   ESC-Exit      F1-Help      F3-Prev      F4-Next      F7-Get
```

1.2 HIGH SCHOOL COURSES Lists high school course name/number and highlights the tasks taught within each course.
HS Course/Task Split Screen:
Upper: High school course number/name/credits, year, and period taught
Lower: Task number/task description for tasks taught



```
VIEW COURSES

CHURCHILL HIGH SCHOOL BUSINESS DEPT

Course Record #  000
Course Name   :  Accounting 1
Course Number :  000                          Credits : 10
Period Preferred:  11 / 1

   OAA01     Basic Addition and Subtraction o
   OAA02     Basic Multiplication of Whole Nu
   OAA03     Basic Division of Whole Numbers
   OAA04     Addition and Subtraction of Frac
   OAA05     Multiplication of Fractions
   OAA06     Division of Fractions
   OAA07     Reducing Fractions to Lowest Ter
   OAA08     Identifying Greatest Common Divi
   OAA09     Converting Fractions to Decimals

ESC-Exit    F1-Help    F3-Prev    F4-Next    F7-Got    F8-Tasks
```

1.3 CC COURSES Lists community college course name/number, and highlights the tasks taught within each community college course.
CC Course/Task Split Screen:
Upper: Community college course number/name/credits
Lower: Task number/description for tasks taught



```
VIEW COURSES

LCC BUSINESS DEPARTMENT

Course Record #  015
Course Name   :  BUSINESS MATHEMATICS*
Course Number :  BA103                        Credits : 03

   OAA01     Basic Addition and Subtraction o
   OAA02     Basic Multiplication of Whole Nu
   OAA03     Basic Division of Whole Numbers
   OAA04     Addition and Subtraction of Frac
   OAA05     Multiplication of Fractions
   OAA06     Division of Fractions
   OAA07     Reducing Fractions to Lowest Ter
   OAA08     Identifying Greatest Common Divi
   OAA09     Converting Fractions to Decimals

ESC-Exit    F1-Help    F3-Prev    F4-Next    F7-Got    F8-Tasks
```

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1.4 CC PROGRAMS Lists each community college program name and abbreviation, and highlights the courses required in the program.

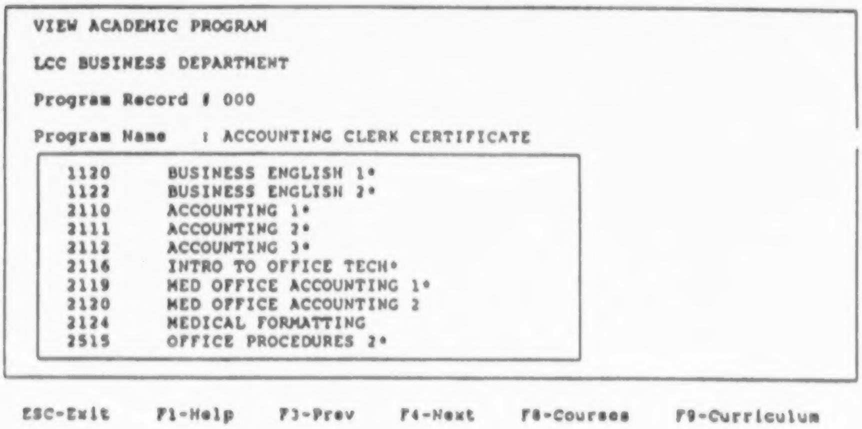
CC Program/Course Split Screen:

Upper: Community college program name and abbreviation

Lower: Course number/course name for courses required in program

or

Lower: Curriculum for community college program



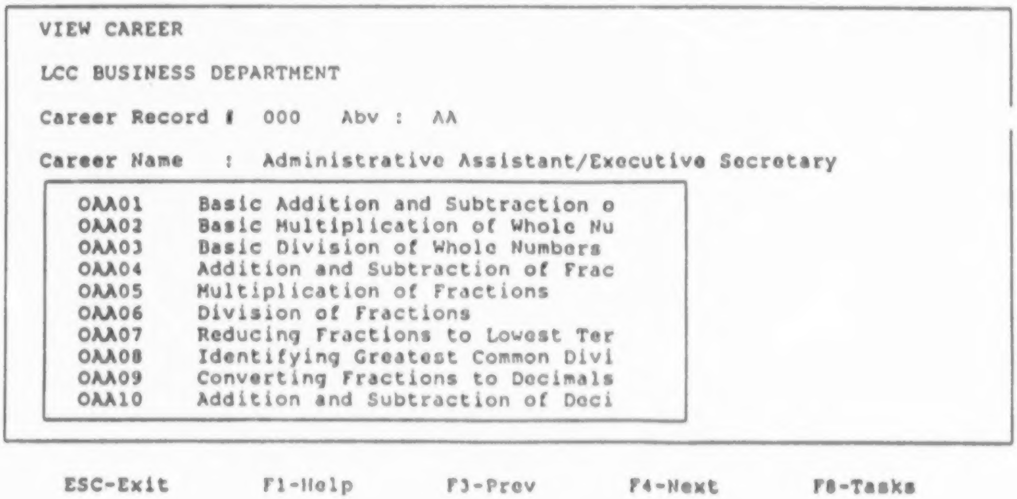
```
VIEW ACADEMIC PROGRAM

LCC BUSINESS DEPARTMENT

Program Record # 000

Program Name   : ACCOUNTING CLERK CERTIFICATE

    1120     BUSINESS ENGLISH 1*
    1122     BUSINESS ENGLISH 2*
    2110     ACCOUNTING 1*
    2111     ACCOUNTING 2*
    2112     ACCOUNTING 3*
    2116     INTRO TO OFFICE TECH*
    2119     MED OFFICE ACCOUNTING 1*
    2120     MED OFFICE ACCOUNTING 2
    2124     MEDICAL FORMATTING
    2515     OFFICE PROCEDURES 2*

ESC-Exit   F1-Help   F3-Prev   F4-Next   F8-Courses   F9-Curriculum
```

1.5 CAREERS Lists each career name and abbreviation, and highlights the tasks required in the career.

Career/Task Split Screen:

Upper: Career name and abbreviation

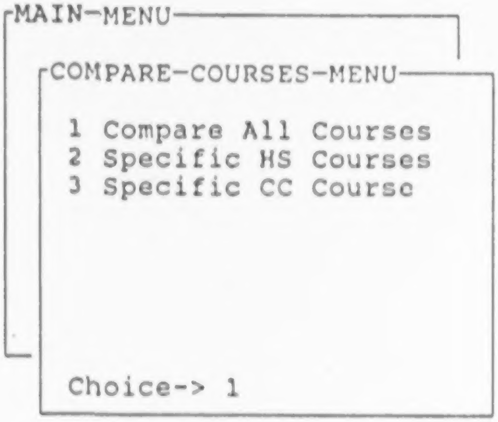
Lower: Task number and task description for tasks required in the career



```
VIEW CAREER

LCC BUSINESS DEPARTMENT

Career Record # 000    Abv : AA

Career Name   : Administrative Assistant/Executive Secretary

    OAA01     Basic Addition and Subtraction o
    OAA02     Basic Multiplication of Whole Nu
    OAA03     Basic Division of Whole Numbers
    OAA04     Addition and Subtraction of Frac
    OAA05     Multiplication of Fractions
    OAA06     Division of Fractions
    OAA07     Reducing Fractions to Lowest Ter
    OAA08     Identifying Greatest Common Divi
    OAA09     Converting Fractions to Decimals
    OAA10     Addition and Subtraction of Deci

ESC-Exit      F1-Help      F3-Prev      F4-Next      F8-Tasks
```

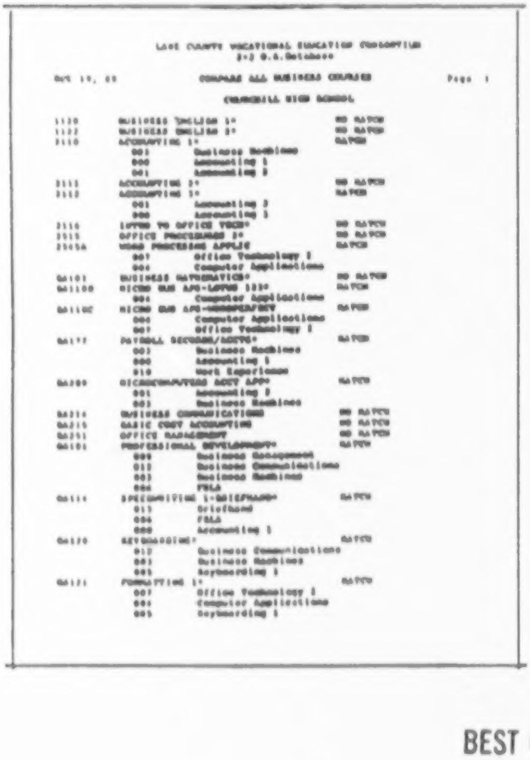
MAIN MENU SELECTION 2 COMPARE COURSES

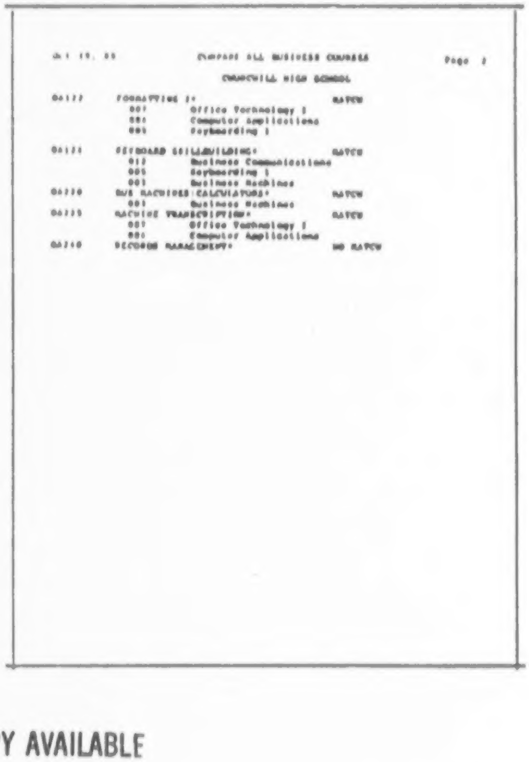
2 COMPARE COURSES Compares tasks for community college and high school courses to identify similarities in course content. Option identifies not only tasks that compare, but also the percentage of tasks that compare, and tasks that do not compare. Options within Compare Courses allow for comparison of all courses, and specific courses.



```
MAIN-MENU
  COMPARE-COURSES-MENU

   1 Compare All Courses
   2 Specific HS Courses
   3 Specific CC Course

   Choice-> 1
```

2.1 COMPARE ALL COURSES Compares all high school and community college courses within the database and lists the percentage of match for each high school course.





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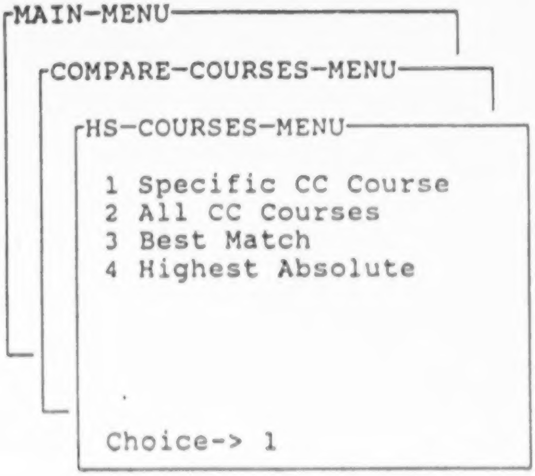
2.2 COMPARE SPECIFIC HIGH SCHOOL COURSE Compares specific high school courses to specific or all community college courses. This sub-option also identifies the best percentage match of high school/community college courses and the courses with the largest numb of matching tasks.

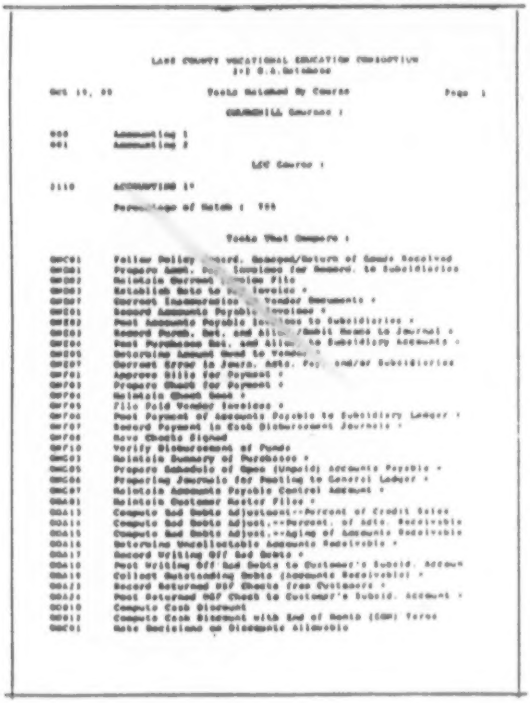


```
MAIN-MENU
  COMPARE-COURSES-MENU
    HS-COURSES-MENU

      1 Specific CC Course
      2 All CC Courses
      3 Best Match
      4 Highest Absolute

      Choice-> 1
```

2.2.1 Specific CC Course Compares a specific high school course or courses to a specific community college course. The output identifies the percentage of matching tasks as well as a list of tasks that compare and tasks that do not compare.



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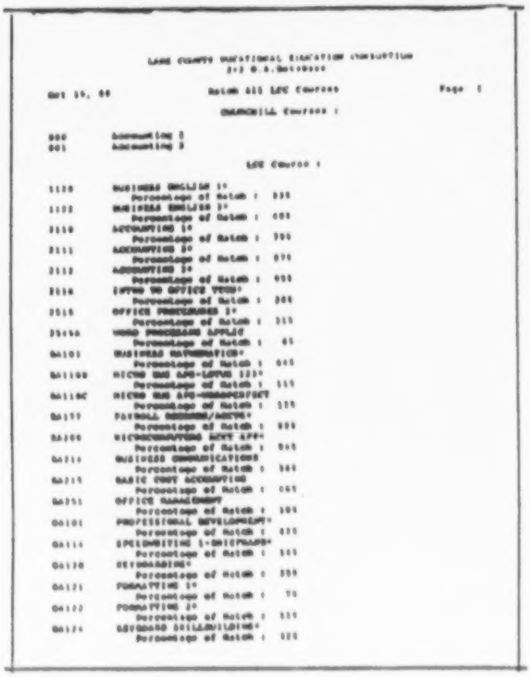
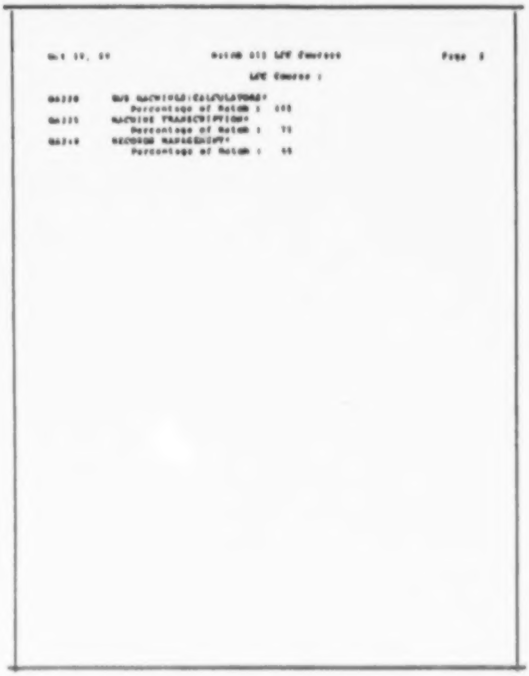
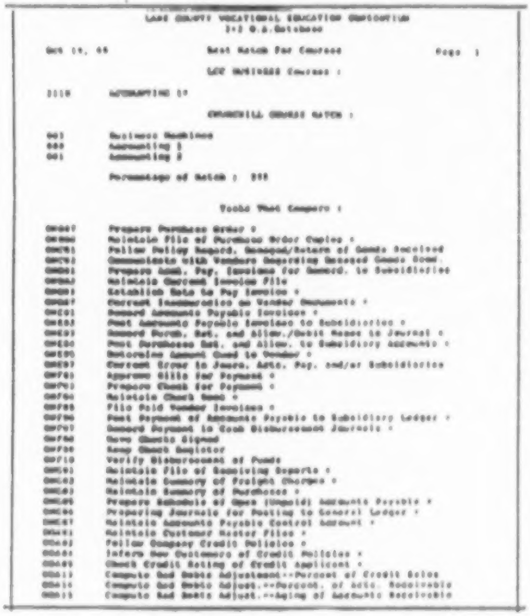
2.2.2 All CC Courses Compares specific high school course or courses to all community college courses to identify the percent of match between specific high school courses and each individual course within the community college curriculum.





2.2.3 Best Match Compares a specific high school course or courses to all community college courses to identify the single best match percentage, as well as a list of tasks that compare and do not compare.



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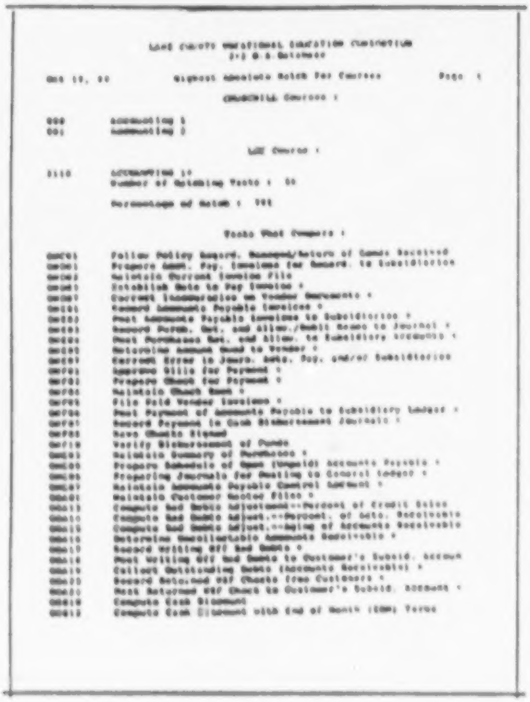
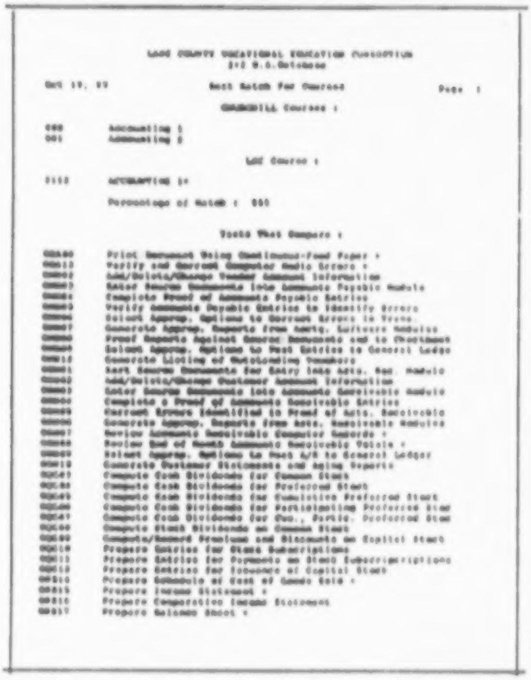
2.2.4 Highest Absolute Compares a specific high school course or courses to all community college courses to identify the high school course with the highest number of tasks that match a community college course. This option also provides a list of tasks that compare and do not compare.



2.3 SPECIFIC CC COURSE Compares a specific community college course to all high school courses to identify the best match and tasks that compare and do not compare.



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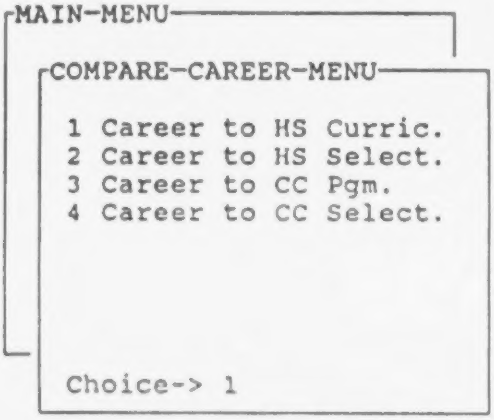
MAIN MENU SELECTION 3 COMPARE CAREERS

3 COMPARE CAREER Compares a specific business career to a high school or community college curriculum to identify the tasks that compare and do not compare. Assists in curriculum development.



```
MAIN-MENU
  COMPARE-CAREER-MENU

    1 Career to HS Curric.
    2 Career to HS Select.
    3 Career to CC Pgm.
    4 Career to CC Select.

  Choice-> 1
```

3.1 CAREER TO HIGH SCHOOL CURRICULUM Compares a specific business career to the complete high school curriculum within the database and identifies the tasks that compare and do not compare.

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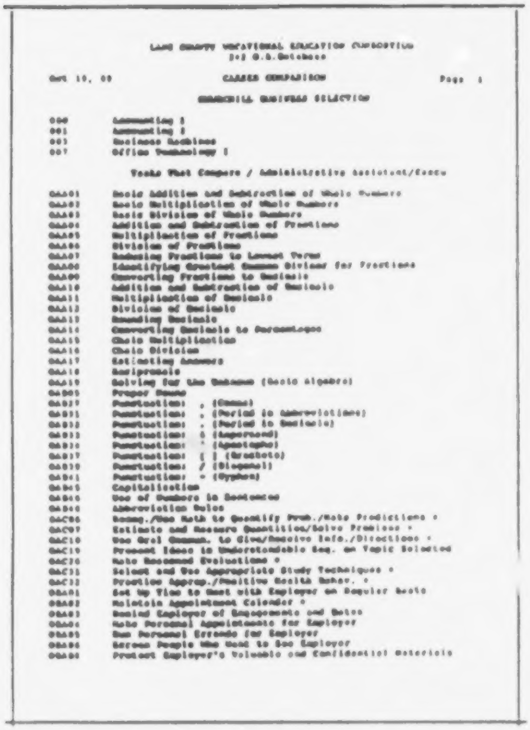
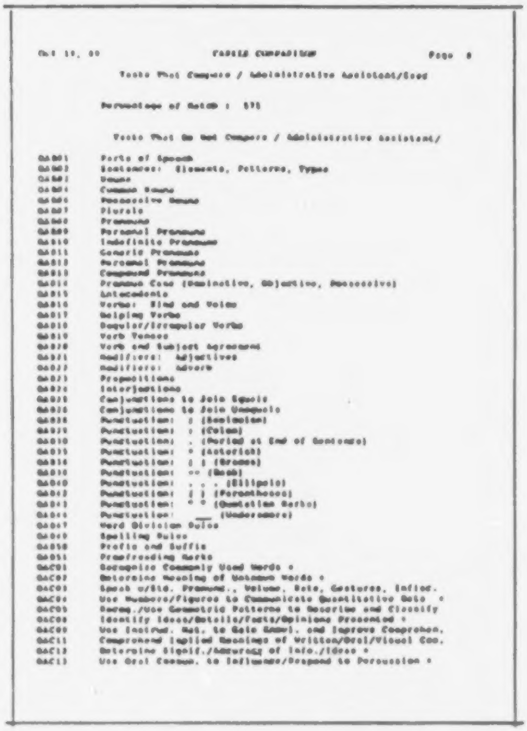
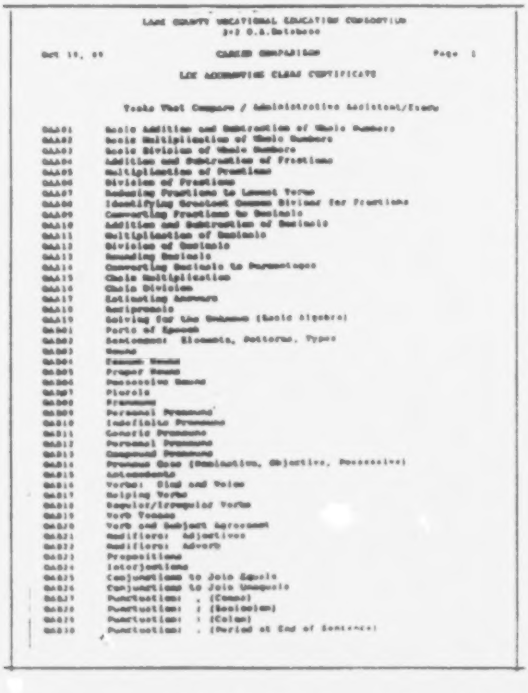
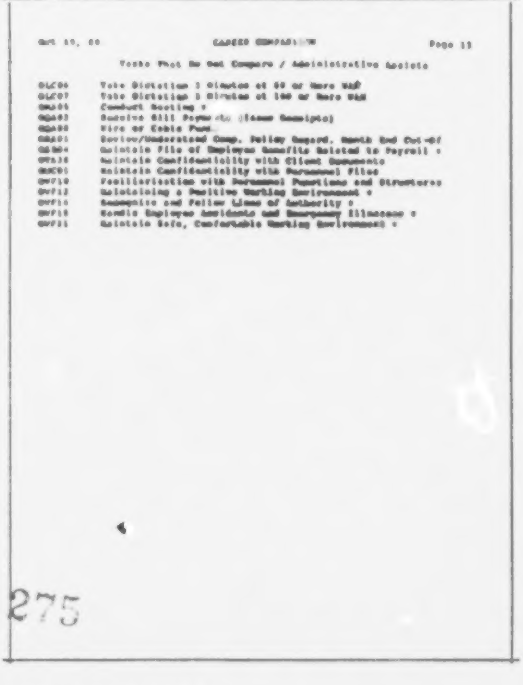
3.2 CAREER TO HIGH SCHOOL SELECT Compares a specific business career to a specific high school course or courses to identify the percentage match as well as the tasks that compare and do not compare.





3.3 CAREER TO CC PROGRAM Compares a specific community college program to a specific career and identifies the tasks that compare and do not compare.





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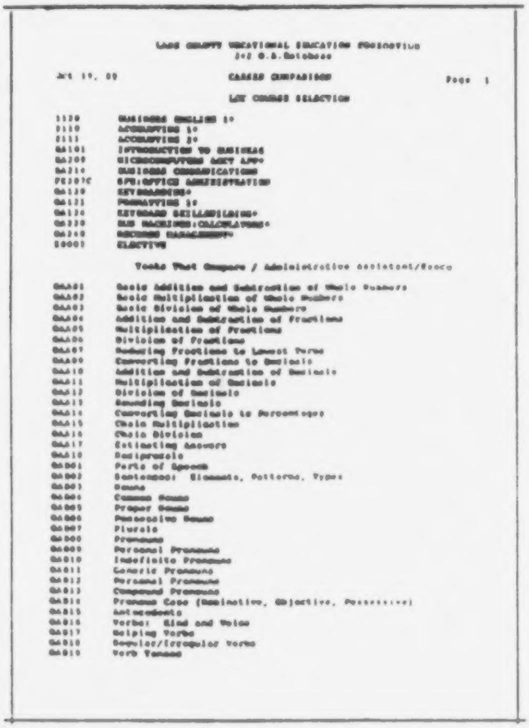
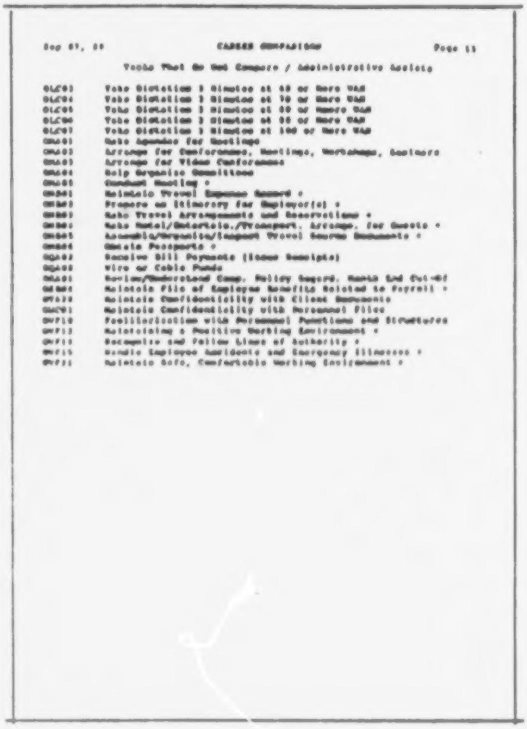
3.4 CAREER TO CC SELECT Compares a specific career to a specific community college course or courses to identify the percentage match as well as the tasks that compare and do not compare.





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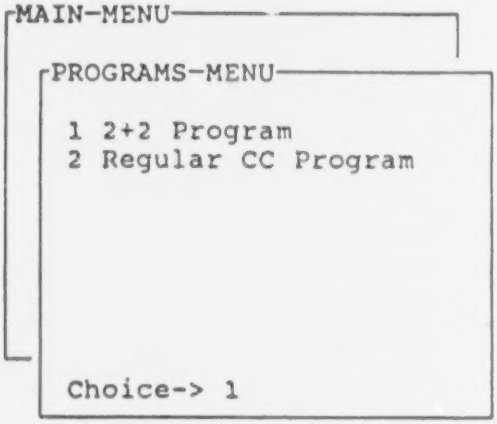
MAIN MENU SELECTION 4 2+2 PROGRAM

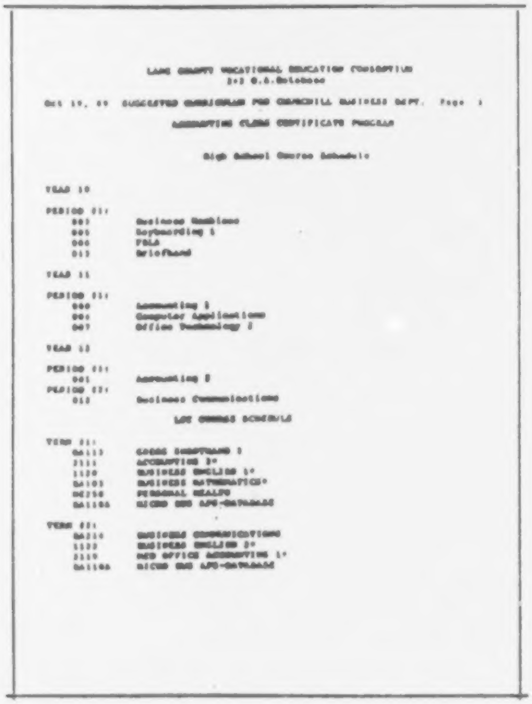
4 2+2 PROGRAM Compares the tasks taught in high school and community college courses to a specific community college program. Output provides a curriculum for the high school student which identifies the high school and community college courses to be taken, as well as a list of the community college courses for which credit will be granted.

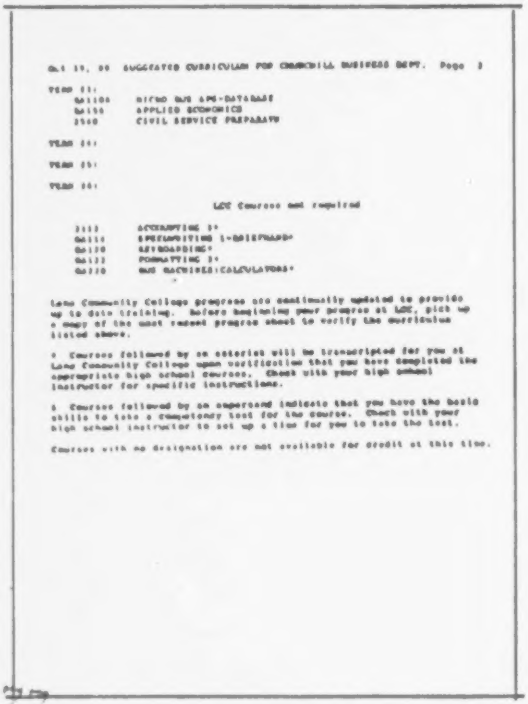


```
1 2+2 Program
2 Regular CC Program

Choice-> 1
```

4.1 2+2 PROGRAM Lists the optimum high school and community college curriculum for a specific community college program based on the comparison of all high school and community college courses.





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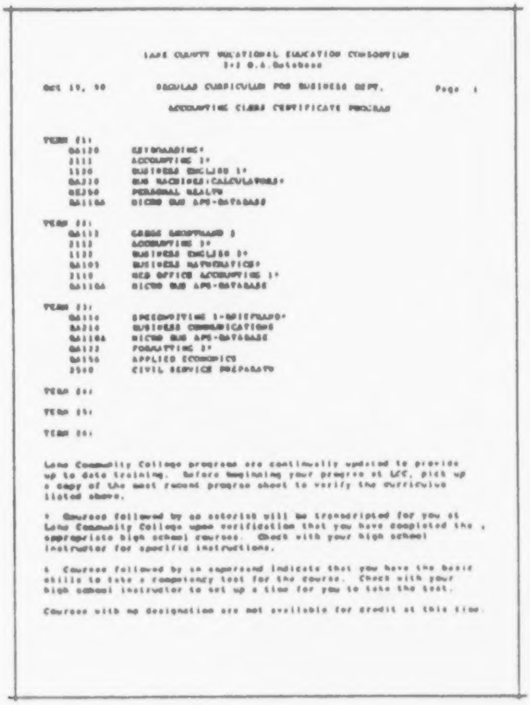
4.2 2+2 PROGRAM FOR HIGH SCHOOL SELECT Lists the high school and community college curriculum for a specific community college program based on the comparison of a specific group of high school courses to all community college courses.

This option is presently in the design stage.

4.3 REGULAR CC PROGRAM Lists the regular curriculum for a specific community college program.



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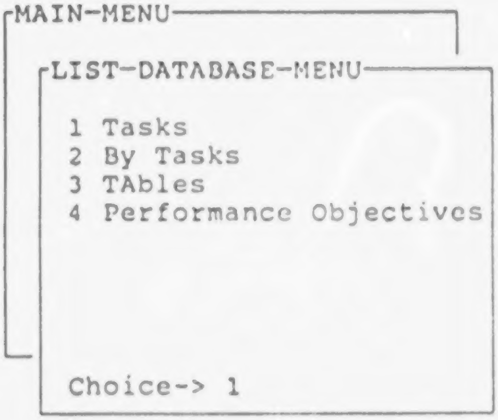
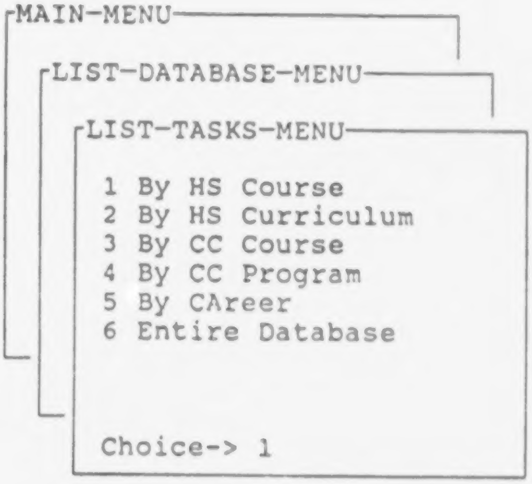
MAIN MENU SELECTION 5 LIST DATABASE

5 LIST DATABASE Lists the tasks, tables, and performance guides wit[illegible] the database.



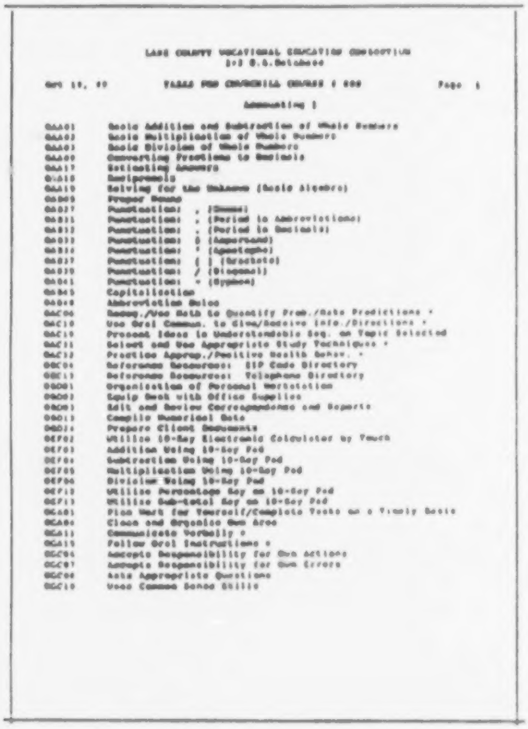
```
MAIN-MENU
  LIST-DATABASE-MENU

   1 Tasks
   2 By Tasks
   3 TAbles
   4 Performance Objectives

   Choice-> 1
```

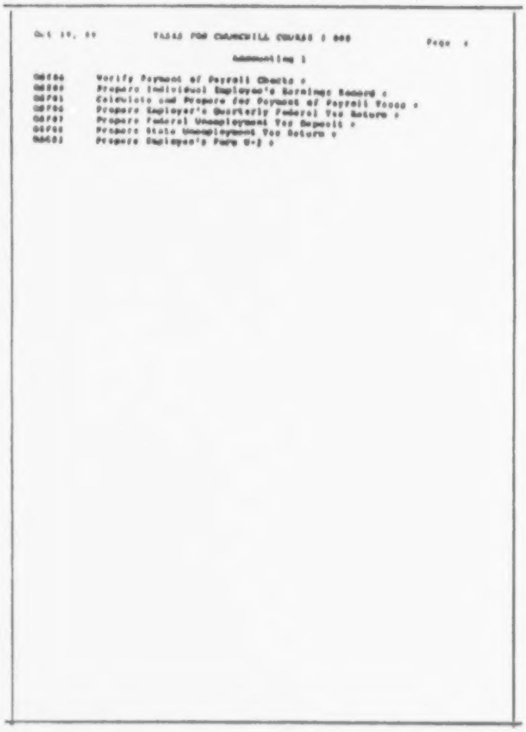
5.1 TASKS Lists the tasks in the database by high school course, high school curriculum, community college course, community college program, career, or for entire database.



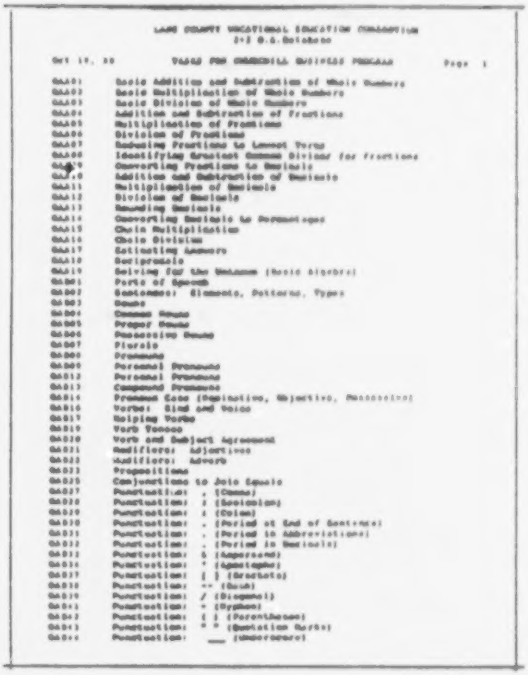
```
MAIN-MENU
  LIST-DATABASE-MENU
    LIST-TASKS-MENU

     1 By HS Course
     2 By HS Curriculum
     3 By CC Course
     4 By CC Program
     5 By CAreer
     6 Entire Database

     Choice-> 1
```

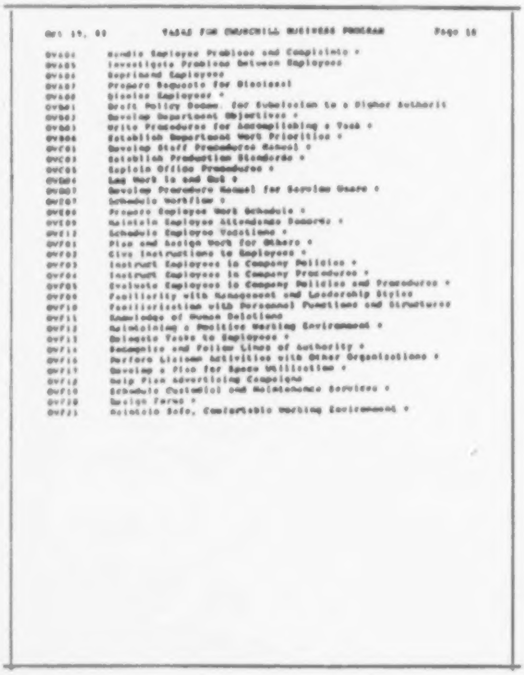
5.1.1 By High School Course Lists the tasks taught in a specific high school course.





5.1.2 By High School Curriculum Lists the tasks taught in the complete high school curriculum.





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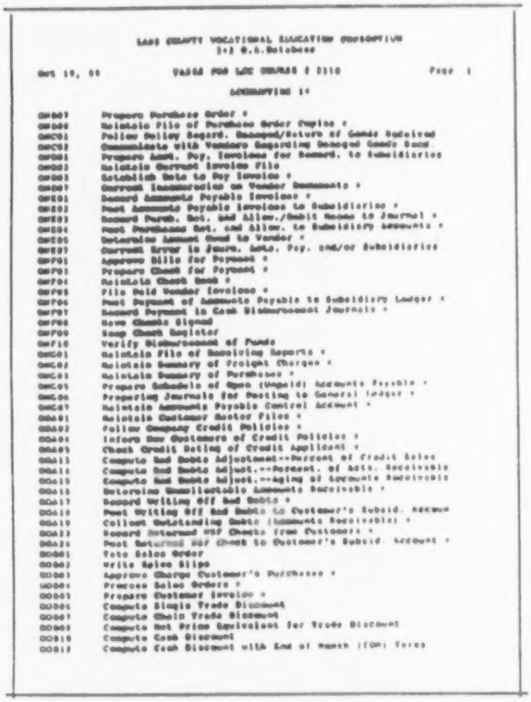
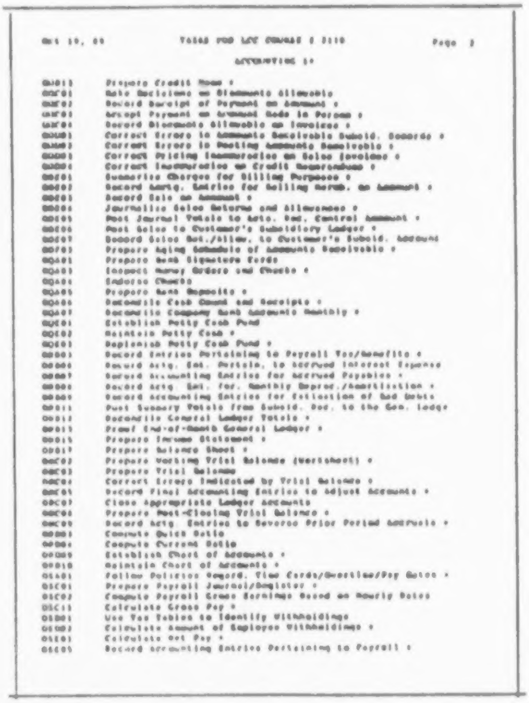
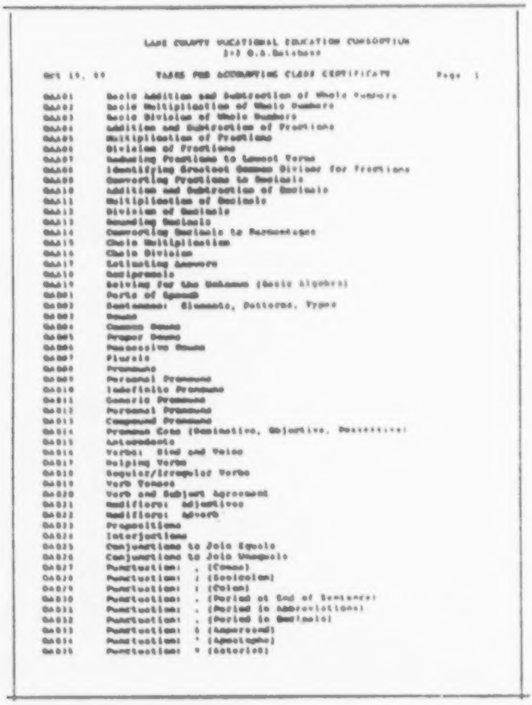
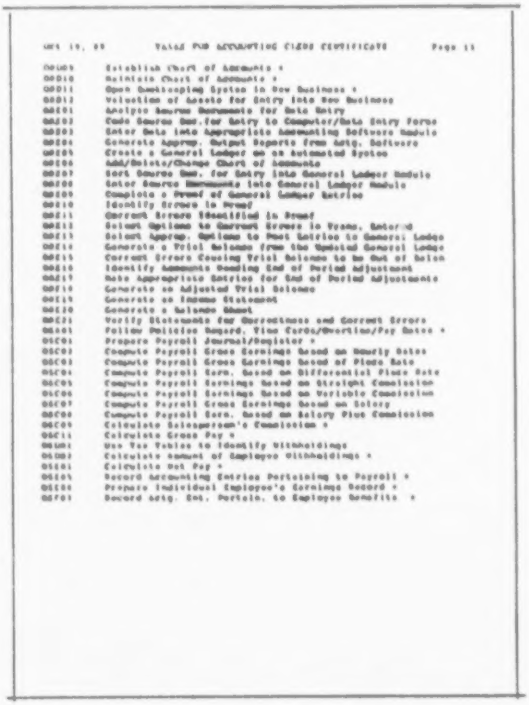
5.1.3 By CC Course Lists the tasks taught in a specific community college course.





5.1.4 By CC Program Lists the tasks taught in a specific community college program.





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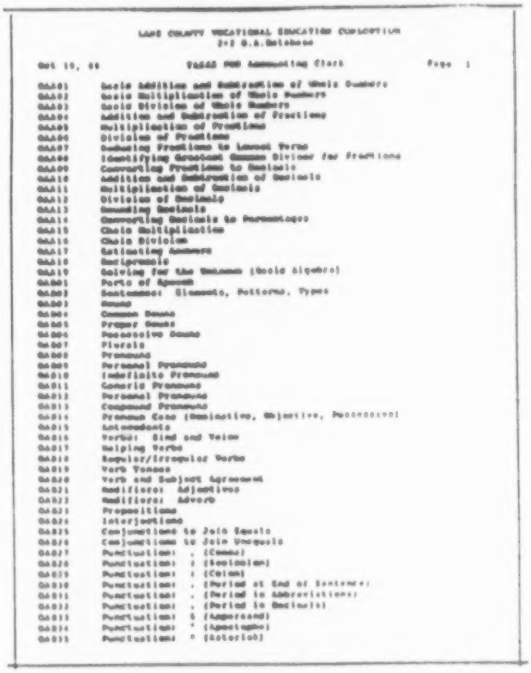
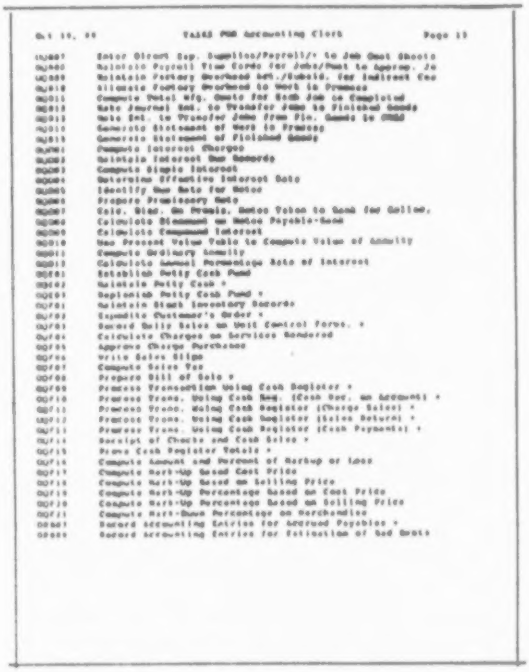
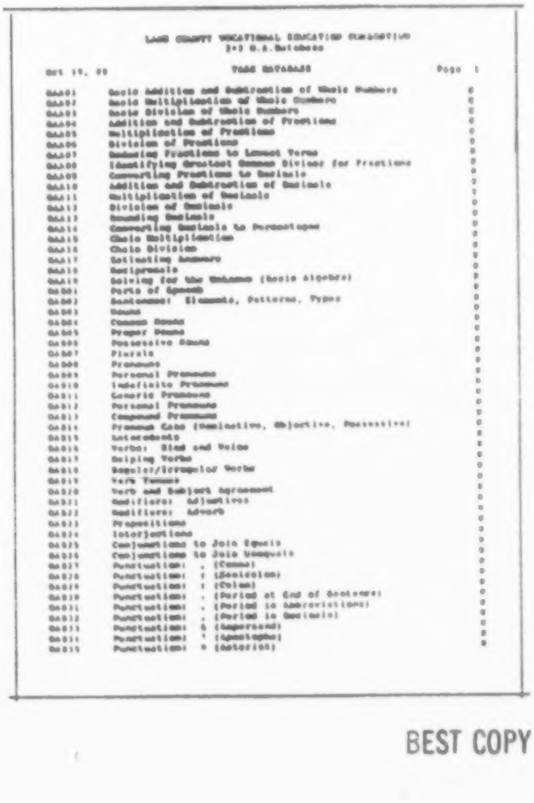
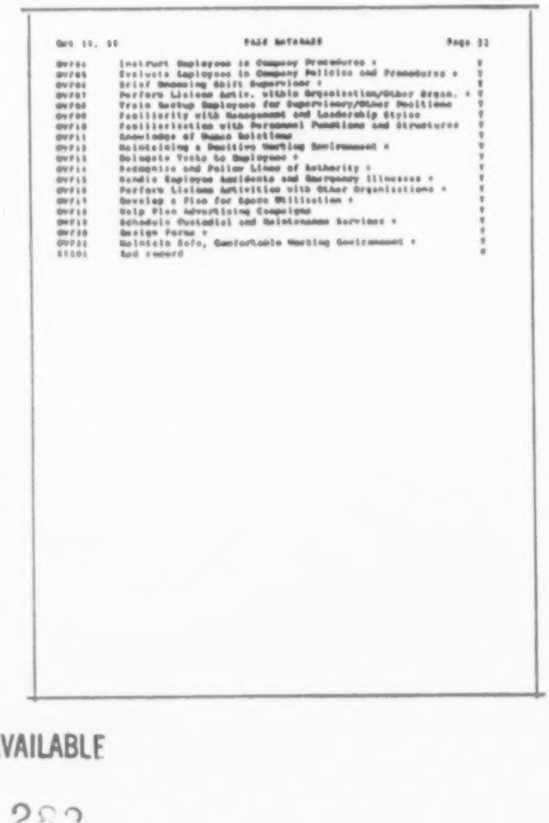
5.1.5 By Career Lists the tasks identified for a specific career.





5.1.6 Entire Database Lists all the tasks included in the 2+2 database.





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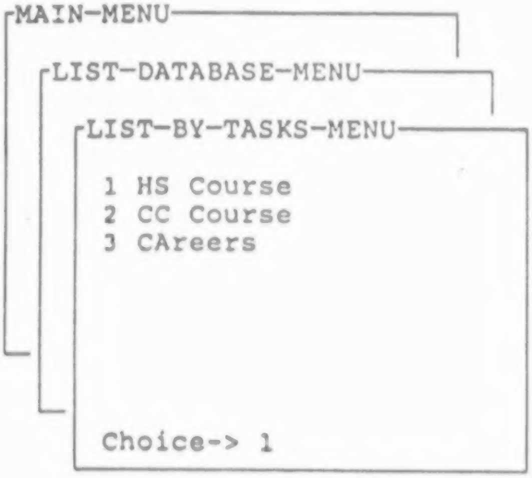
5.2 <u>BY TASK</u> Lists the high school or community college courses or careers that teach or require a specific task.

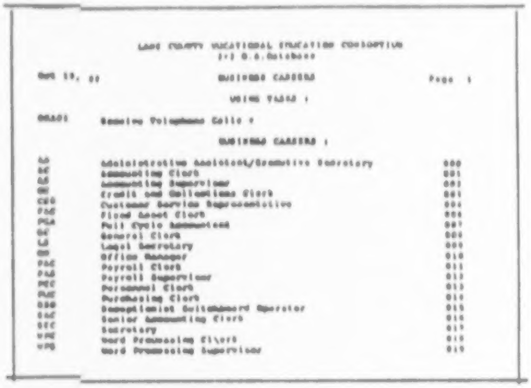


```
MAIN-MENU
 LIST-DATABASE-MENU
  LIST-BY-TASKS-MENU

   1 HS Course
   2 CC Course
   3 CAreers

   Choice-> 1
```

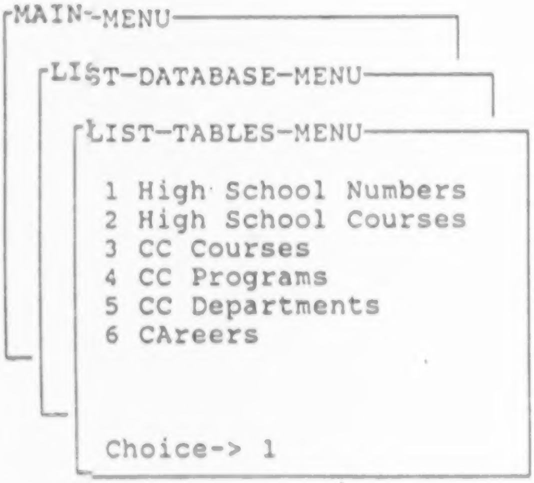
5.2.1 <u>HS Course</u> Lists the high school courses where a specific task or group of tasks are taught.

5.2.2 <u>Community College Course</u> Lists the community college courses where a specific task or group of tasks are taught.

5.2.3 Career Lists the career or careers where knowledge of a specific task or tasks is required.

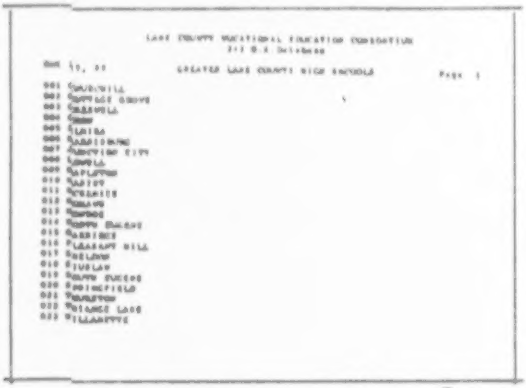


5.3 TABLES Lists tables used within database which show numbers for high schools, high school courses, community college courses, community college programs, community college departments and careers.


MAIN-MENU
LIST-DATABASE-MENU
LIST-TABLES-MENU
1 High School Numbers
2 High School Courses
3 CC Courses
4 CC Programs
5 CC Departments
6 CAreers

Choice-> 1

5.3.1 High School Numbers Lists the number for each high school.



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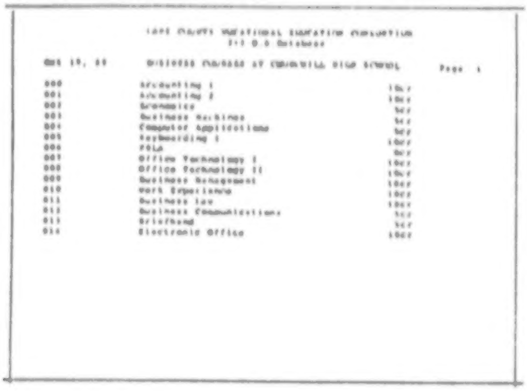
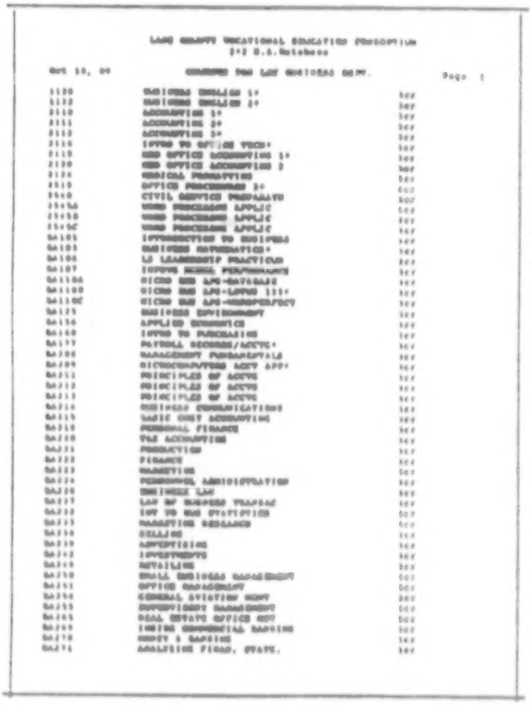
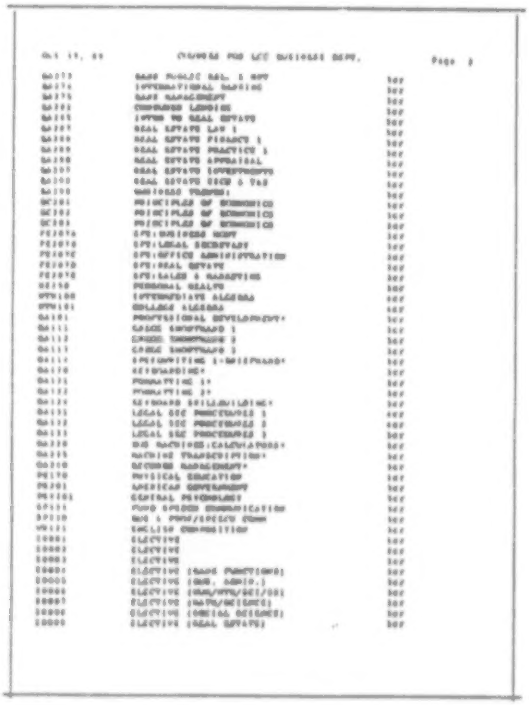
5.3.2 High School Courses Lists the course number and name for each high school class.



5.3.3 CC Courses Lists the course number and name for each community college course.





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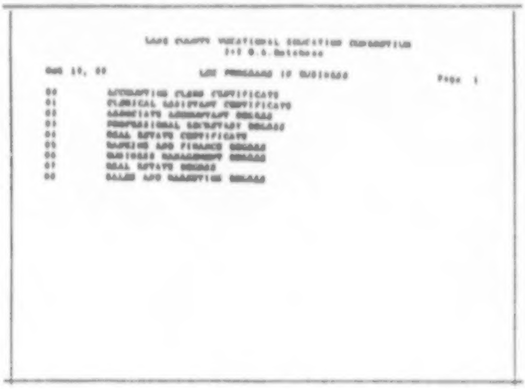
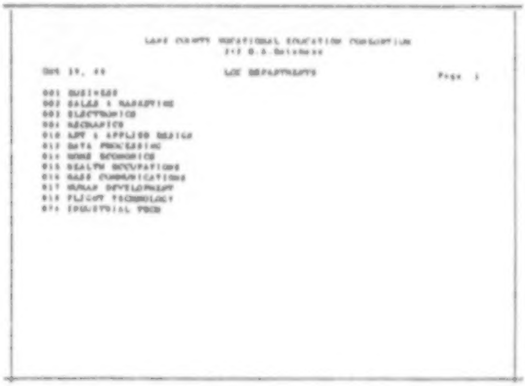
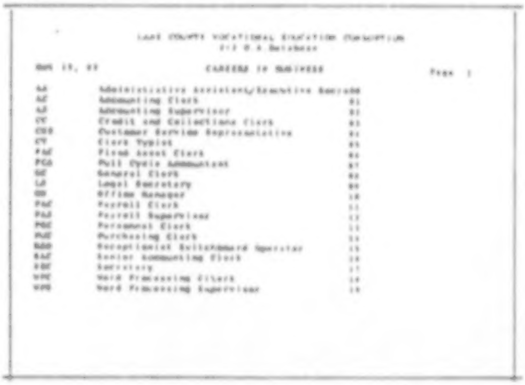
5.3.4 CC Programs Lists the number and name of each community college program.



5.3.5 CC Departments Lists the number for appropriate community college departments.



5.3.6 Careers Lists the name and number for each career within the database.



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5.4 PERFORMANCE OBJECTIVES Displays or prints the performance objectives for the tasks within the database.

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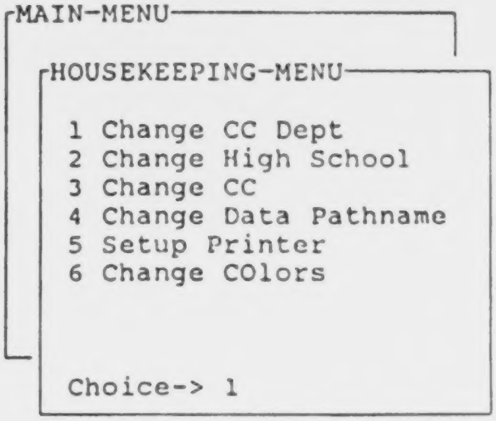
6 <u>HOUSEKEEPING MENU</u> Allows the 2+2 database user to set up and/or change parameters within the 2+2 database.



```
MAIN-MENU
  HOUSEKEEPING-MENU

   1 Change CC Dept
   2 Change High School
   3 Change CC
   4 Change Data Pathname
   5 Setup Printer
   6 Change COlors



   Choice-> 1
```

6.1 <u>CHANGE CC DEPARTMENT</u> Allows software to access database information for identified departments within the community college.

6.2 <u>CHANGE HIGH SCHOOL</u> Allows software to access database course information for individual high schools.

6.3 <u>CHANGE CC</u> Allows access of data files for other community colleges if appropriate data files are available.

6.4 <u>CHANGE DATA PATHNAME</u> Allows operator to specify drive and file from where database data files are to be accessed.

6.5 <u>SETUP PRINTER</u> Allows operator to setup form feed value, margins, line width, and lines per page for printer being used.

6.6 <u>CHANGE COLORS</u> Allows operator to change the colors/shades for the various components of the menus and sub-menus. This section is to be used to adjust the shade to make the screen more readable for specific monitors.

APPENDIX II

PROCEDURES FOR GRANTING CREDIT THROUGH THE 2+2 DATABASE

DESCRIPTION: Procedures for Granting Community College Credit to High School Students Using the 2+2 Database Software

PURPOSE: To provide a series of procedures by which high school students will be able to receive community college credit for high school business classes.

INFO NEEDED:
Student Information (name, address, etc.)
High School Courses Completed by Student
Community College Program of Interest to Student
Compare Course Information from 2+2 Database Software

PERFORMANCE OBJECTIVE:

To provide the information needed for a high school business student to receive community college credit, the following procedures will need to be followed:

1. Complete the student information section on the 2+2 Credit Transmittal Form.
   a. Complete or have student complete the personal information block on the Transmittal Form including all information requested.
   b. If necessary, or appropriate, ask parent or guardian to sign Transmittal Form.
2. On the Transmittal Form complete the High School Course block.
   a. Identify the name and number of each high school business course taken by the student.
   b. Identify the date of completion for each course.
   c. Verify that the student received a grade of "C" or better in each class.
   d. Identify the terminal speeds for the students as requested on the form.
3. From the 2+2 Database Software print a comparison of the high school courses taken by the students to the complete LCC Business Department curriculum.
   a. From the MAIN MENU select 2 Compare Courses.
   b. From the Compare Courses Menu select 2 Specific High School Courses.
   c. From the Specific High School Courses Menu select 2 All Community College Courses.
   d. The high school courses pick window will appear to allow for the toggling of specific high school courses.
      1) Toggle each of the high school courses taken by the student.
      2) When all courses have been toggled, depress ESC to solidify selections.
   e. OUTPUT To print a copy of the comparison, depress P for print when output options are displayed.

4. Verify courses listed on the course comparison to the courses listed on the Transmittal Form.
5. Attach the copy of the course comparison to the transmittal form.
6. Make copies of Course Comparison and Transmittal Form
    a. LCC One copy is to be mailed to: Greg Harpole, Downtown Business Education Center, Lane Community College, 1059 Willamette, Eugene, OR 97401.
    b. High School Maintain one copy for your files.
    c. Student Provide a copy of the Course Comparison and Transmittal Form to the student.

2 + 2 CREDIT TRANSMITTAL FORM AND PROCEDURES

STUDENT INFORMATION

Name______________________________________ Phone__________________

Address___________________________ City____________________ Zip_______

School___________________________ Social Security Number_____________

LCC Program of Interest____

HIGH SCHOOL COURSE INFORMATION

Course Number	Course Name	Date Completed	"C" or Better Y or N

Student Signature

Parent Signature (If Needed)

Business Teacher Skill Confirmation

Keyboarding Skill Alpha Copy (3 minute timing) _____GWAM ____ Errors

Keyboarding Skill Alpha-Num. (3 minute timing) _____GWAM ____ Errors

10 Key Calculator (Add Skills) 3 minute timing _____DPM ____ Errors

Dictation (3 Minute Takes) _____WAM ____ Errors

Business Teacher

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RECEIVING COMMUNITY COLLEGE CREDIT FOR HIGH SCHOOL BUSINESS CLASSES

INTRODUCTION

The 2+2 Database Software has been developed to assure that high school students are able to receive credit for skills learned in high school and to make an easy transition to Lane Community College.

The 2+2 Database Software compares what is taught in the business courses in your high school to the courses offered in the Business Department at Lane Community College. From the comparison, the software is able to identify the LCC Business Department courses for which you should receive credit and the course schedule you should follow once you enter LCC.

The 2+2 Transmittal Form and Procedures, provides a process that simplifies the credit granting process.

If you have questions, contact Greg Harpole, Downtown Business Education Center, Lane Community College, 1059 Willamette, Eugene, OR 97401, or call 726-2251.

Submittal of 2+2 Transmittal Form

Before submitting the 2+2 Transmittal Record to Lane Community College, the following steps must be completed:

High School Students

1. Read the Instructions for Receiving Community College Credit.
2. Talk with your high school business instructor or call the Business Department at Lane Community College if you have questions.

High School Teacher

1. Review the Instructions for Receiving Community College Credit.
2. Follow the procedures for granting community college credit to high school students, including:
    a. Complete Course Comparison.
    b. Make copies of 2+2 Credit Transmittal and Course Comparison.
    c. Distribute copies to high school student and LCC. Maintain a file copy.

The Lane Community College Role

To receive community college credit for business courses taken in high school, the procedures listed below will be followed:

1. Evaluation Once your high school teacher has submitted the 2+2 Credit Transmittal Forms to Lane Community College, the Business Department will review your form to verify the community college courses for which you will receive credit.

2. Letter After the Transmittal Forms have been evaluated, a letter will be mailed to you indicating the community college credit to be received and the procedures to follow to receive the credit.

3. Formal Record The letter will serve as the formal record to be used to begin the process of transcripting the community college credit. Keep your copy of the letter.

Transcripting Process

To have your credit transcripted at Lane Community College, the procedures listed below will be followed:

1. Before or after your graduation from high school, apply for admission to Lane Community College. Contact the Admissions Office by mail or phone if you have questions.

2. Before registration at Lane Community College, meet with one of the Lane Community College counselors to develop your term schedule at Lane Community College. Make sure you bring the following to the meeting with the counselor:
   a. Letter indicating community college credit to be received.
   b. Your copy of the 2+2 Credit Transmittal Materials.

3. If you register at Lane Community College as a full-time student, there will be no charge for the transcripting of your community college credit. There will be $12.00 transcripting fee for students who enter LCC as part-time students (less than 11 credits).

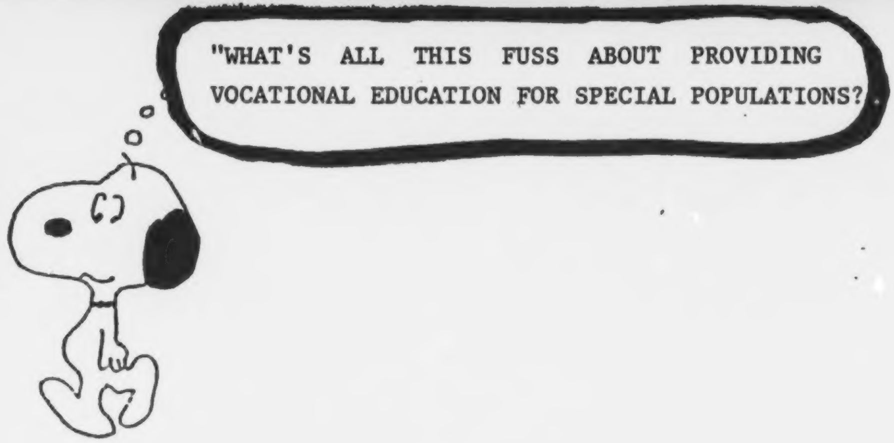
4. The transcripting process will begin as you complete your first term at Lane Community College.
   a. Bring your copy of the 2+2 Credit Transmittal Record and your letter to either: the Lane Community College Downtown Business Education Center, 1059 Willamette, Eugene, or to the Business Department on the LCC Main Campus.
   b. Ask that the records be prepared to transcript your credit.
   c. The Business Department will prepare the transcript requests, and you will be asked to return to the department in a few days to pick up the transcript request.
   d. Take the transcript request to the Student Records Department on the 2nd Floor of the Center Building on the Main Campus.
   e. Your credit will be entered onto your transcript after your first completed term at Lane Community College.

Specifics About 2+2 Credit

1. 2+2 Credit must be transcripted within one year of your graduation from high school.

2. 2+2 Credit will be entered onto your transcript just like courses taken at Lane Community College. 2+2 Credit will be transcripted with a grade of "P" to indicate "Pass."

OR89CD14


"WHAT'S ALL THIS FUSS ABOUT PROVIDING VOCATIONAL EDUCATION FOR SPECIAL POPULATIONS?"

CBVE FOR SPECIAL NEEDS STUDENTS

FACTS:

1. 82.4% of 20-24-year-olds are in the workforce...although far too many are employed and underemployed in part-time, low-paying jobs which cannot adequately support a family.

2. Youth not going on to college are starved for support. Only about five percent of those eligible for federally-supported job training receive it, then usually for about four months-not enough training to adequately prepare for a career or to overcome a prior lifetime of neglect and deprivation.

3. Our young adults are largely literate, but they fail alarmingly at many common tasks described to them through print.

4. High school dropouts are unlikely to be considered for employment much above minimum wage, except in geographic areas characterized by severe labor shortages and relative economic prosperity. Their future among the working poor is bleak.

School dropouts who disconnect from socie6y and succumb to lives of crime, addiction, chronic unemployment and dependency are headed for personal disaster with its attendant social costs.

"EDUCATED AND TRAINED PEOPLE ARE AN UNLIMITED RESOURCE, WHILE UNEDUCATED AND UNTRAINED PEOPLE ARE UNLIMITED LIABILITIES."

The William T. Grant Foundation Commission on Work, Family and Citizenship (1988). The Forgotten Half.Washington, D.C.

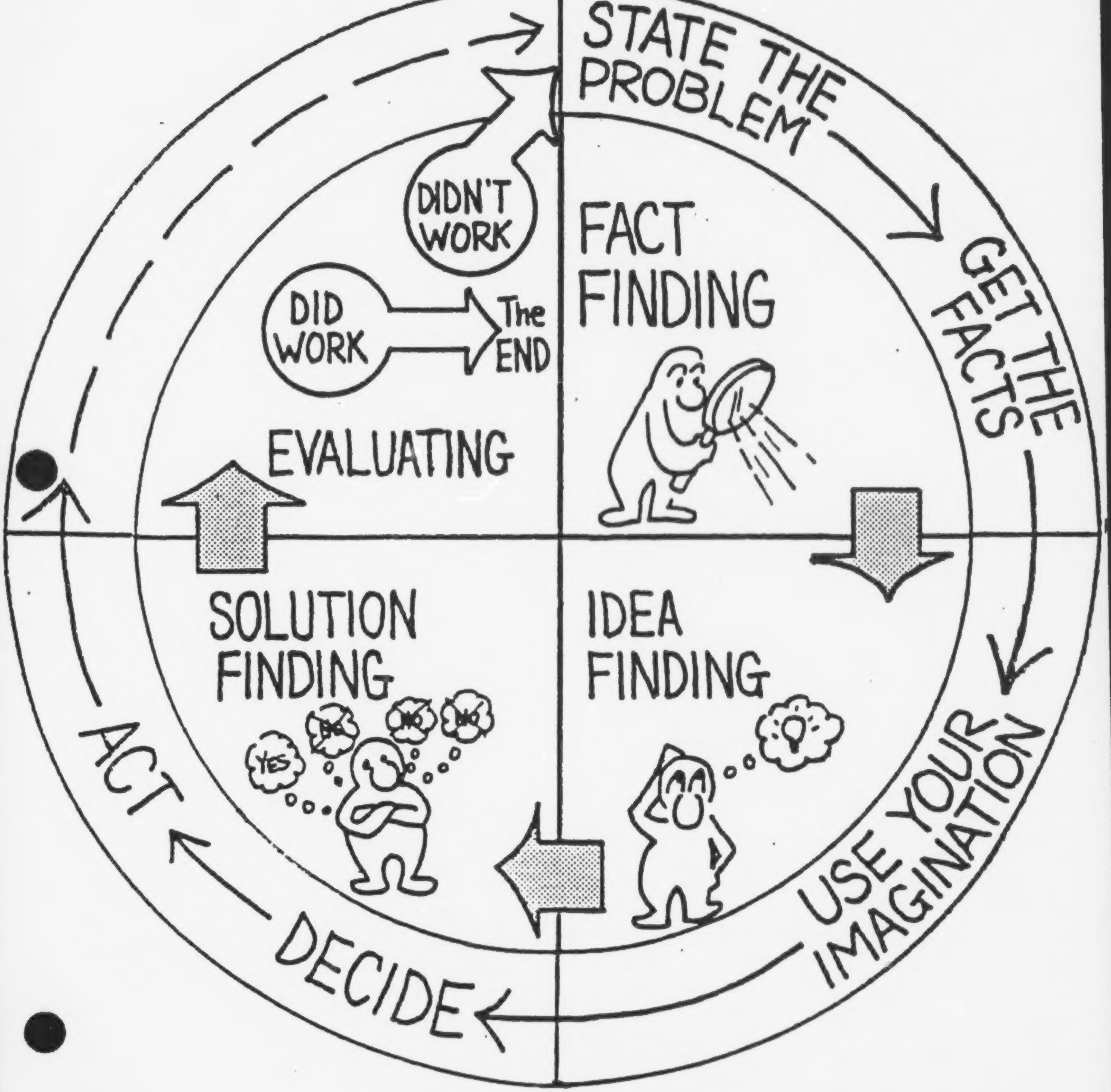
Michelle D. Sarkees
University of North Texas
Denton, TX 76203

A NEEDS ASSESSMENT WAS CONDUCTED WHICH RESULTED IN A LIST OF OVER 500 SKIILLS NECESSARY FOR WORKERS TO BE EMPLOYABLE. AN ANALYSIS OF THIS LIST BY OVER 300 PERSONS IN THE LABOR MARKET RESULTED IN 27 BASIC SKILLS WHICH ARE NECESSARY FOR MINIMUM ACCEPTABLE PERFORMANCE IN IN OCCUPATION.

OCCUPATIONAL SURVIVAL SKILLS

1. Punctuality
2. Dependability
3. Getting Along With Others
4. Working As A Team Member
5. Organizing the Work Activities of Others
6. Understanding Written Information
7. Basic Writing Skills
8. Basic Speaking Skills
9. Being Neat and Clean in Appearance
10. Maintaining Good Health
11. Knowing Your Strengths and Weaknesses
12. Giving An Honest Day's Work
13. Loyalty to Your Organization
14. Making Independent Decisions
15. Using Initiative and Imagination
16. Knowing What is Expected
17. Basic Arithmetic Skills
18. Knowing How To Use Materials and Equipment
19. Locating Information
20. Having Specialized Training
21. Knowledge of Operating Procedures
22. Following Instructions
23. Working Without Close Supervision
24. Working Under Pressure
25. Adjusting to Work Situations
26. Managing Time and Materials
27. Following Safety Regulations

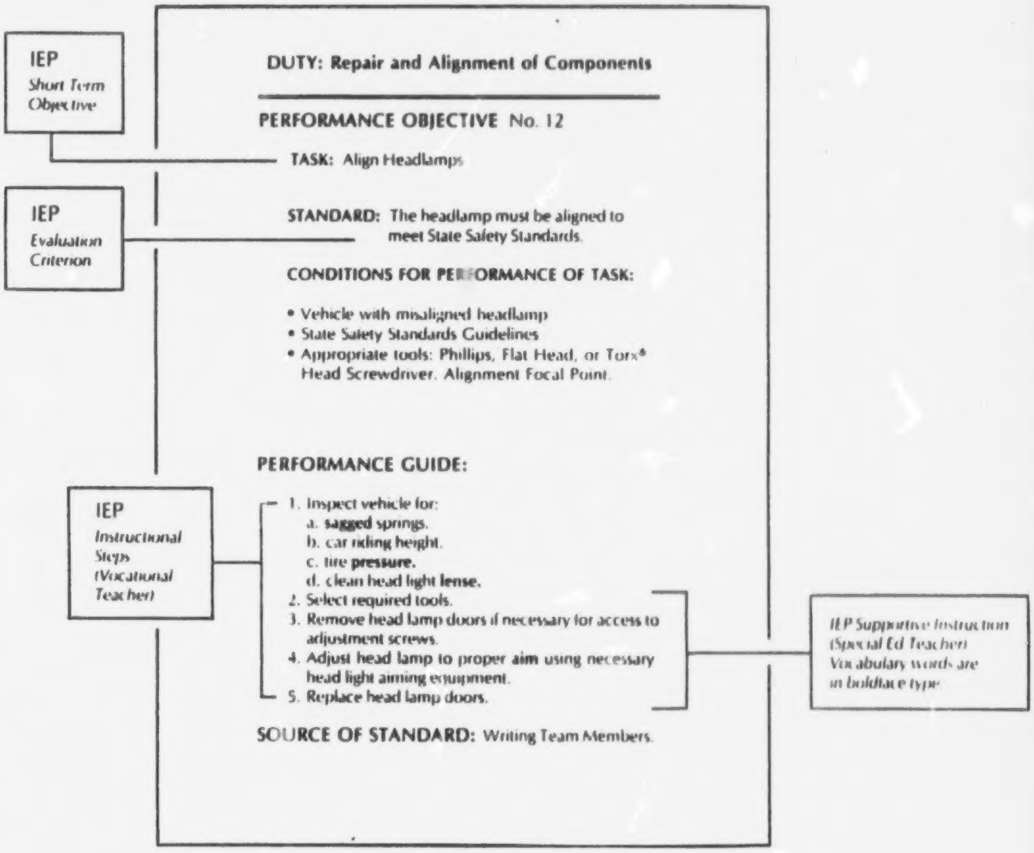
Problem Solving Steps


STATE THE PROBLEM
GET THE FACTS
USE YOUR IMAGINATION
DECIDE
ACT
FACT FINDING
IDEA FINDING
SOLUTION FINDING
YES
NO
NO
NO
EVALUATING
DID WORK
The END
DIDN'T WORK

14

V-TECS and the Individu

The illustration below is a sample page from the V-TECS catalog for AUTO BODY REPAIRER. The components of the "Task Sheet" provide information needed to develop the IEP.


IEP
Short Term Objective
IEP
Evaluation Criterion
IEP
Instructional Steps (Vocational Teacher)
IEP Supportive Instruction (Special Ed Teacher) Vocabulary words are in boldface type

DUTY: Repair and Alignment of Components

PERFORMANCE OBJECTIVE No. 12

TASK: Align Headlamps

STANDARD: The headlamp must be aligned to meet State Safety Standards.

CONDITIONS FOR PERFORMANCE OF TASK:

- Vehicle with misaligned headlamp
- State Safety Standards Guidelines
- Appropriate tools: Phillips, Flat Head, or Torx® Head Screwdriver. Alignment Focal Point.

PERFORMANCE GUIDE:

1. Inspect vehicle for:
   a. **sagged** springs.
   b. car riding height.
   c. tire **pressure.**
   d. clean head light **lense.**
2. Select required tools.
3. Remove head lamp doors if necessary for access to adjustment screws.
4. Adjust head lamp to proper **aim** using necessary head light aiming equipment.
5. Replace head lamp doors.

SOURCE OF STANDARD: Writing Team Members.

V-TECS Specializing in quality Competency-Based Vocational-Technical Education

Catalogs of Performance Objectives and Performance Guides

A Catalog is "basically" a detailed job description of a specific occupation. It deals with the hands-on aspect of an occupation, or the "psychomotor skills" involved.

Compiled in the worker-validated catalogs are: Performance Objectives (which include every duty and task required for a job), Performance Standards, and Conditions for performing the tasks, organized by duty areas.

Also included are: Indexes of Duties and Tasks; Equipment and Tool Lists; Sources of Standards; and Sources of Literature which relate to the job title in question.

To date, V-TECS members have produced more than 130 catalogs which p vide in-depth analysis of more than 350 job titles as defined by the Diction of Occupational Titles.

The catalogs include 23,000 tasks representing input from nearly 19,000 cumbent workers.

V-TECS Curriculum Guides

The V-TECS Guide is a natural extension of one or more catalogs. Whil catalog is a detailed job description of an occupation, a Guide provides competency-based content and resources needed to deliver the training that occupation.

lized Education Program

The illustration below is a sample of the vocational component of an IEP that was derived from the V-TECS task sheet. The special education teacher could use the catalog information to develop objectives for those tasks in which a student needed supportive educational services, and to develop vocabulary lists and math skills lists.

INSTRUCTIONAL AREA: Auto Body Repairer

ANNUAL GOAL: Janet will demonstrate entry-level skills needed to be employed as Auto Body Repairer.

		EVALUATION OF INSTRUCTIONAL OBJECTIVES		PROGRESS		
Instructional Objective	Instructional Methods Media/Material Title(s) Optional	Tests, Materials Evaluation Procedures To Be Used	Criteria of Successful Performance	Introduced	Developing	Employable
Given a vehicle requiring head lamp alignment, the student will align the headlamp to meet State Safety Standards.	1. Read the procedures with Janet prior to class and review new vocabulary. (Special Ed Teacher) 2. Read the State Safety Standards with Janet prior to class. (Special Ed Teacher) 3. Review list of required tools. (Special Ed Teacher) 4. Practice sheets for procedures, tools, and safety standards. (Special Ed Teacher) 5. Demonstration of headlamp alignment - performance guides 1-5. (Auto Body Teacher)	1. Vocabulary test of words within procedures and safety standards. 2. Performance test: Selection of required tools. 3. Headlamp to be aligned in vocational lab to meet criterion.	1. 90% accuracy on word recognition test. 2. Accuracy of tools selection. 3. Vocational teacher evaluation of headlamp alignment based on criterion in V-TECS catalog.			

Guides take into account the cognitive and affective domains of learning.

The development of a V-TECS Guide involves workers and instructors in the occupation, and is verified by workers and instructors that are knowledgeable of the occupation. This developmental process provides the user with confidence in the materials, and flexibility in conducting classroom and lab activities. A V-TECS Guide includes: Instructions about How to Use the V-TECS Guide, Units of Instruction, Task List and Job Titles indicating specific Catalogs involved, Definition of Terms Used, and Tool and Equipment Work Aids List.

O[illegible] Occupational Data Analysis System

ODAS offers the opportunity to utilize the wealth of occupational and labor market information that currently exists along with products produced by V-TECS; to further assure that curriculum content is relevant to the needs of business, industry and education.

ODAS is computer-based and uses data from three existing data bases to:

- Describe skill requirements of jobs and the level of education or training required
- Describe skills included in training programs
- Identify common skills in different training programs so programs can be clustered
- Describe a person's skill background that is transferable to other jobs or training programs
- Identify skills required by new and emerging occupations
- Identify special needs accommodations required of different jobs. . .
- And, much much more. . .

Criterion Referenced Test Items

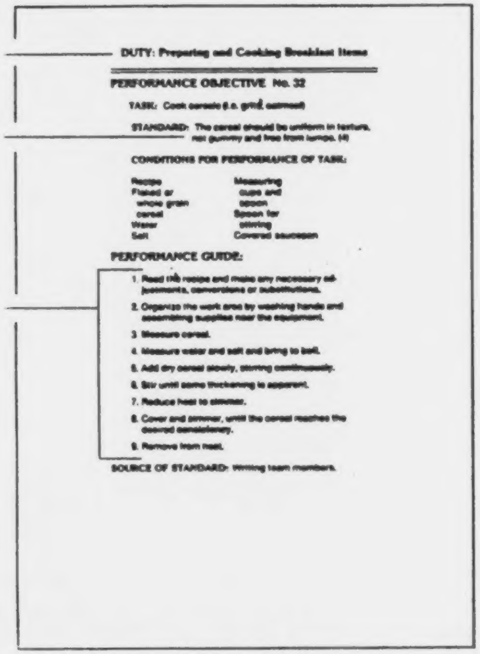
Based on V-TECS task list and accessed through a computerized test item bank, the system assists users in constructing a test for a specific occupation. In order to obtain available test items, the user must simply identify the task and/or performance objective of the job or occupation being evaluated.

V-TECS and the Cooperative Education Training Plan

The illustrations below are sample pages from the V-TECS catalog for COMMERCIAL COOK. The components of the "Task Sheets" provide information needed to develop the Cooperative Education Plan.

The illustration below provides an example of how the components identified in V-TECS relate to those included in a training plan. It is realized that the example is more detailed than necessary.

Specific instructional steps, as identified in the V-TECS under "Performance Guides" would not need to be duplicated onto the training plan when using V-TECS as a basis for development. However, the instructional steps provided would be useful to the related classroom instructor and the job supervisor.



DUTY: Preparing and Cooking Breakfast Items

PERFORMANCE OBJECTIVE No. 32

TASK: Cook cereals (i.e. grits, oatmeal)

STANDARD: The cereal should be uniform in texture, not gummy and free from lumps. (4)

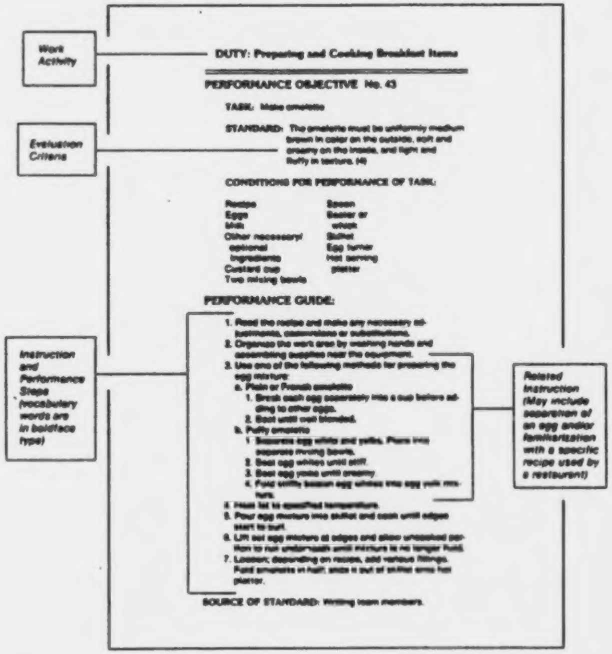
CONDITIONS FOR PERFORMANCE OF TASK:

Recipe	Measuring cups and spoon
Flaked or whole grain cereal	Spoon for stirring
Water	Covered saucepan
Salt	

PERFORMANCE GUIDE:

1. Read the recipe and make any necessary adjustments, conversions or substitutions.
2. Organize the work area by washing hands and assembling supplies near the equipment.
3. Measure cereal.
4. Measure water and salt and bring to boil.
5. Add dry cereal slowly, stirring continuously.
6. Stir until some thickening is apparent.
7. Reduce heat to simmer.
8. Cover and simmer, until the cereal reaches the desired consistency.
9. Remove from heat.

SOURCE OF STANDARD: Writing team members.


Work Activity
Evaluation Criteria
Instruction and Performance Steps (vocabulary words are in boldface type)
Related Instruction (May include separation of an egg and/or familiarization with a specific recipe used by a restaurant)

DUTY: Preparing and Cooking Breakfast Items

PERFORMANCE OBJECTIVE No. 43

TASK: Make omelette

STANDARD: The omelette must be uniformly medium brown in color on the outside, soft and creamy on the inside, and light and fluffy in texture. (4)

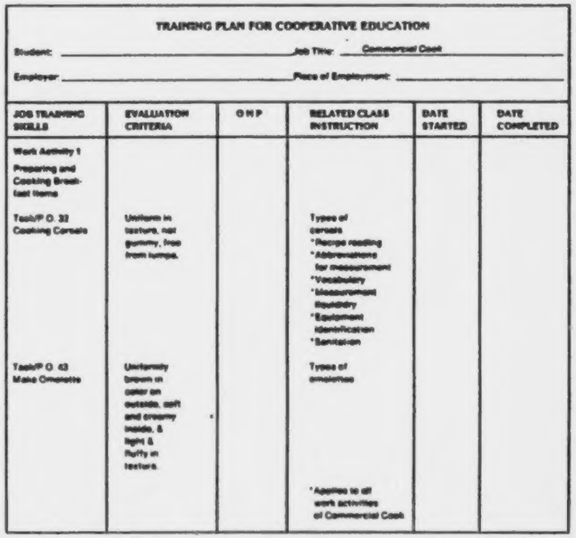
CONDITIONS FOR PERFORMANCE OF TASK:

Recipe	Spoon
Eggs	Beater or whisk
Milk	Skillet
Other necessary/optional ingredients	Egg turner
Custard cup	Hot serving platter
Two mixing bowls	

PERFORMANCE GUIDE:

1. Read the recipe and make any necessary adjustments, conversions or substitutions.
2. Organize the work area by washing hands and assembling supplies near the equipment.
3. Use one of the following methods for preparing the egg mixture:
   a. Plain or French omelette
      1. Break each egg separately into a cup before adding to other eggs.
      2. Beat until well blended.
   b. Puffy omelette
      1. Separate egg white and yolks. Place into separate mixing bowls.
      2. Beat egg whites until stiff.
      3. Beat egg yolks until creamy.
      4. Fold stiffly beaten egg whites into egg yolk mixture.
4. Heat fat to specified temperature.
5. Pour egg mixture into skillet and cook until edges start to curl.
6. Lift out egg mixture at edges and allow uncooked portion to run underneath until mixture is no longer fluid.
7. [illegible]; depending on recipe, add various fillings. Fold omelette in half, slide it out of skillet onto hot platter.

SOURCE OF STANDARD: Writing team members.



TRAINING PLAN FOR COOPERATIVE EDUCATION

Student: ________ Job Title: Commercial Cook

Employer: ________ Place of Employment: ________

JOB TRAINING SKILLS	EVALUATION CRITERIA	O H P	RELATED CLASS INSTRUCTION	DATE STARTED	DATE COMPLETED
Work Activity 1 Preparing and Cooking Breakfast Items					
Task/P.O. 32 Cooking Cereals	Uniform in texture, not gummy, free from lumps.		Types of cereals *Recipe reading *Abbreviations for measurement *Vocabulary *Measurement liquidity *Equipment identification *Sanitation		
Task/P.O. 43 Make Omelette	Uniformly brown in color on outside, soft and creamy inside, & light & fluffy in texture.		Types of omelettes *Applies to all work activities of Commercial Cook		

· work activities that will contribute
rner's progress through a review of
Duties and Tasks. *(Cooperative*
› Coordinator, Job-Site Supervisor,
earner)

› listing of knowledges and skills
› the student learner to perform the work activities through review of performance guides. *(Student Learner, Cooperative Education Coordinator, Job-Site Supervisor)*

5. Develop a plan for implementing Steps 3 and 4 identifying timelines and responsible parties. *(Job-Site Supervisor, Cooperative Education Coordinator)*

6. Communicate areas in need of special emphasis to other school personnel involved in the delivery of the students instruction through the identification of related skills i.e. measurement through review of V-TECS performance guides. *(Cooperative Education Coordinator)*

7. If the student is handicapped include support services in the Individualized Educational Program. (IEP)

BEST COPY AVAILABLE

TIMELINE OF INSTRUCTION
RELATED VOCABULARY AND MATH SKILLS
PROGRESS REPORT

V-TECS MANUAL: ____

VOCATIONAL INSTRUCTION								SPECIAL EDUCATION INSTRUCTION							
				Progress					Progress				Progress		
V-TECS Task Number	Page Number	Anticipated Date of Instruction	Actual Date of Instruction	Introduced	Involved	Productive	Employable	Related Math	Introduced	Developing	Competent	Related Vocabulary	Introduced	Developing	Competent

MODIFYING THE VOCATIONAL CURRICULUM FOR SPECIAL NEEDS LEARNERS

Modifications for Meeting the Needs of Handicapped Students Include:

I. IDENTIFICATION OF STUDENT NEEDS
   A. Physical needs
   B. Educational needs
   C. Emotional needs
   D. Social needs
   E. Personal interest
   F. Occupational interests
   G. School interests

II. MODIFICATION OF FACILITIES AND EQUIPMENT

   A. Modification of desks, work benches, equipment, tools
   B. Mobile units/workshops
   C. Special lighting, sound amplification devices
   D. Audiovisual materials and aids (cassettes, films, videotapes)
   E. Ramps and other building, classroom accessibility aids

III. INSTRUCTIONAL MATERIALS MODIFICATION

   A. Reading level of material
   B. Match instructional material to student needs and abilities
   C. Age of student
   D. Learning style
   E. Interest of student
   F. Individualized instructional packages
   G. Large print materials
   H. Simplified instruction guides and manuals
   I. Printed rather than verbal instructions

IV. IDENTIFICATION AND UTILIZATION OF APPROPRIATE TEACHING TECHNIQUES

   A. Open entry/open exit programs
   B. Individualized instruction/programmed learning materials
   C. Visuals and audiovisual materials
   D. Concise, clear , easy to understand and specific instructions
   E. Well illustrated, simple-to-follow procedures
   F. Use of hands-on instruction and projects
   G. Use of tutors, paraprofessionals, teacher aides, and volunteers
   H. Use of family counseling and career guidance techniques
   I. Use of appropriate evaluation techniques for each student to assess progress

V. SCHEDULE MODIFICATIONS

   A. Longer total time for course completion
   B. Drop a class-double up in another
   C. Programs conducted in cooperation with business and industry
   D. Discussion periods
   E. Peer Instruction
   F. Mini-courses of single skill development

CURRICULUM CUSTOMIZATION FOR SPECIAL NEEDS LEARNERS

TASK: Tools and Equipment used in Tree Surgery

Performance Objectives: When given the hand tools used in tree surgery identify them with 95% accuracy on written test and use each in the field properly observing all safety precautions.

Criterion Reference Measure: Provided with an OSHA manual and pruning tools - identify each tool.

Learning Activities	Group Instruction	I (Charlie)	II (John)
1. Identify and give uses for all tools (hand) in tree surgery. 2. Demonstrate proper use of each tool according to OSHA standards. a. Chainsaw - cuts branches and tree trunks. b. Pruning saw - cuts branches 3" in diameter or larger. c. Pole pruner and pole saw - used to cut high branches. d. Pruning shears (1) lopping - cuts branches 2-3" in diameter. (Also cuts 1/2 to 1") (2) hand - cuts twigs 1/2" diameter or less.	1. Use overhead projector to display transparencies for tool identification; also display actual tools. 2. Review use of pruning tools with slide series. 3. Demonstrate use of each pruning tool. 4. Show a movie on pruning tool safety. 5. Provide hands on experience pruning.	1. Resource teacher reviews slide series of tools and gives a name sign to each. This process is reinforced daily. 2. Chainsaw modification: On a safe location of the frame, spray bright yellow fluorescent paint. He will be able to feel vibration to determine if machines is on or off.	1. Have student review his set of flashcards picturing hand tools. 2. Using highlighting, have related instructor assist student in reading OSHA standards for operating a chainsaw.
Materials and Resources		I. Charlie 1. Interpretutor 2. Resource teacher (MH deaf) 3. Flashcards 4. Videotape system 5. Related instructor	II. John 1. Related instructor 2. Voc. instructor 3. Flashcards
Evaluation Group Evaluation 1. Oral quiz on tool identification 2. Student demonstration of correct use of pruning tools.		I. Charlie Student give correct sign for each hand tool.	II. John Give an oral quiz with no other students present or have student answer using flashcards

Example developed by Phyllis Meyer, graduate student at George Washington University, Washington D.C. and former horticulture instructor.

Johnson, C. Curriculum customization for spec[illegible] needs learners. Journal for Vocational Special Need[illegible]ducation April, 1980, pp. 3-6.

COURSE DESCRIPTION

Course Title:____________________ Teacher:________________

____

+ Used Frequently - Used Somewhat o Used Seldom

____

INFORMATION INPUT

Sources:

____ Textbook
____ Worksheets
____ Lecture
____ Discussion
____ A-V Material
____ Audio Tape
____ Concrete Experience
____ Observation

Structure:

____ Directed
____ Independent
____ Peer Tutor
____ 1-1 Adult
____ Small Group Learning
____ Large Group Learning

INFORMATION OUTPUT

Test Format:

____ Short Answer
____ Essay
____ Multiple Choice
____ True-False
____ Matching
____ Computation
____ Word Problems

Assignments:

____ Worksheets
____ Short Papers
____ Term Papers
____ Lab Projects
____ Media Projects
____ Oral Reports
____ Group Discussion
____ Computation
____ Word Problems
____ Charts/Graphs

OTHER CLASS REQUIREMENTS:

____ Notetaking
____ Outlining
____ Use of Reference Manuals
____ Independent Research
____ Measuring (to ____ inch)
____ Skimming/Scanning

____ Memorization
____ Correct Spelling
____ Punctuality
____ Coming to Class Prepared
____ Participation in Class Discussion

____

GRADING CRITERIA:_______________________________________

____

EXTRA CREDIT POLICY:____________________________________

____

ATTENDANCE POLICY:______________________________________

____

HOMEWORK POLICY:____

____

MAKE-UP WORK POLICY:____________________________________

____

EXAMPLE DOCUMENT #3 (continued)

OTHER PROGRAM REQUIREMENTS
(Check only high priority requirements)

ACADEMIC SKILLS NEEDED

___Becoming interested
___Paying attention to the spoken word
___Paying attention to the printed word
___Following directions
___Keeping track of materials, assignments
___staying on task
___Completing tasks on time
___Working in groups
___Working independently
___Learning by listening
___Expressing him/herself verbally
___Reading textbooks
___Reading study sheet or tests
___Understanding what is read
___Writing legibly
___Expressing him/herself in writing
___Spelling
___Seeing relationships
___Understanding cause and effect; anticipating consequences
___Drawing conclusions/making inferences
___Remembering
___Notetaking
___Outlining
___Independent research
___Measuring
Other:

BEHAVIORAL SKILLS NEEDED

Coming to class on time ___
Coming to class prepared ___
Following directions ___
Staying in seat ___
Staying on task ___
Completing tasks on time ___
Understanding/following Safety rules ___
Asking questions or for help when needed ___
Working in groups ___
Working independently ___
Other:

OTHER PREREQUISITES____________________

ATTENDANCE POLICY____________________

HOMEWORK POLICY____________________

OTHER PROGRAM RULES____________________

MAKE-UP WORK POLICY____________________

GENERAL GUIDELINES AND INSTRUCTIONAL TECHNIQUES

- Orientation
- Flexible Pacing
- Demonstration
- Breaking Material Into Small Distinct Steps
- Positive Environment and Feedback
- Use of Peer Tutors, College Students, and Volunteers
- Flexible Grouping
- Providing Field Trips and Job Site Visits
- Use of Media
- Use of Student-Teacher Contracts

Northwest Conference on Competency Based Vocational Education

"CBVE - What It Is And What It Isn't"

presented by

John Horton, Assistant Director
Division of Support Services
Office of Vocational Education
2024 Capital Plaza Tower
Frankfort, Kentucky 40601
502-564-2890

Inn Of the Seventh Mountain
Bend, Oregon
October 18-20, 1989

EDUCATIONAL EXCELLENCE

1. Teachers

2. Facilities / Equipment

3. Curriculum

CBVE

1. Tasks
2. Performance Objectives
3. Learning Activities
4. Evaluation

Task List = What to teach

Performance Objectives = Level to which you teach

Learning Activities = How you are going to teach

Evaluation = How do you know if the student has learned what you have taught

* De Diploma

TASK LIST FOR GRAPHIC ARTS

	1 653.685-010 Bindery Worker	2 979.684-026 Print Shop Helper	3 979.381-018 Paste-up Copy Camera Oper.	4 972.381-022 Lithographic Stripper	5 650.582-022 Phototypesetter Operator	6 972.382-014 Lithographic Photographer	7 651.482-010 Offset Press Operator I	8 651.380-010 * Printer	9	10	COMPLETED
DUTY AREA A: DESIGN, LAYOUT AND SPECIFICATIONS											
1. Identify printing processes and products		X					X	X			
2. Identify principles of design			X		X			X			
3. Identify special effect techniques			X		X	X		X			
4. Match typestyles with requirements			X		X			X			
5. Prepare thumbnail sketch			X		X			X			
6. Prepare rough layout			X		X			X			
7. Identify printing measurements	X	X	X	X	X		X	X			
8. Markup copy for typesetting			X		X			X			
9. Make a dummy for a multiple-page signature			X		X			X			
DUTY AREA B: COMPOSITION PROCEDURES											
10. Identify composition processes and equipment		X			X			X			
11. Identify typestyles				X	X			X			
12. Identify typesetting methods				X	X			X			
13. Typeset to specifications					X			X			
14. Measure and fit copy				X	X			X			
15. Set up layout table				X	X			X			

TYPEWRITING I TASK LIST

DUTY AREA A-ICA* COMPUTER OPERATIONS (Complete if Typewriting is taught on Computers)

1. *ICA-001* Power up/down the computer system
2. *ICA-002* Identify operating system commands
    - a. Format a diskette
    - b. Copy a diskette
    - c. Make a backup
3. *ICA-003* Clean and maintain hardware and maintain software
4. *ICA-004* Use a simple software package
    - a. Identify software copyright laws
    - b. Identify printed material copyright laws

DUTY AREA A-TYP* TYPEWRITER OPERATIONS

5. *TYP-001* Identify and use parts of typewriter
    - a. Adjust paper guides
    - b. Adjust ribbon control
    - c. set line space selector
    - d. plan and set margin/tab stops
6. *TYP-002* Clean and maintain typewriter

DUTY AREA B-TYP KEYBOARD OPERATIONS AND TECHNIQUES

7. *TYP-003* Operate keyboard
    - a. Operate function keys
    - b. Operate alphabetic keyboard
    - c. Operate numeric/symbol keyboard
8. *TYP-004* Key timed writings

DUTY AREA A-BUC LANGUAGE ARTS APPLICATIONS

9. *BUC-001* Apply capitalization rules
10. *BUC-002* Apply number expression rules
11. *BUC-003* Apply punctuation rules
12. *BUC-004* Apply word division rules
13. *BUC-005* Use correct spelling
14. *BUC-006* Prepare rough draft copy
    - a. Key/format rough draft copy
    - b. Proofread and edit copy using proofreader's marks
    - c. Correct errors
15. *BUC-007* Use reference materials

DUTY AREA C-TYP TABLES

16. *TYP-005* Key/format horizontally centered problems
17. *TYP-006* Key/format vertically centered problems

Title: ____

Task Number:

PERFORMANCE OBJECTIVE

Task Statement:

Supplies and Equipment for Performance of Task:

Standard of Performance of Task:

PERFORMANCE STEPS	KNOWLEDGE	PERFORMANCE	EVALUATION

DEFINITION OF A PERFORMANCE OBJECTIVE

Parts of a Performance Objective. A performance objective specifies what a student must be able to be at the end of an instructional sequence. It consists of three parts:

TASK: What the student is to do.

CONDITION: Circumstances under which the task is to be performed, including equipment, supplies, etc., to be used in performance.

STANDARD: The level of skill to which the task must be performed.

Here are examples of performance objectives:

Given an unlabeled diagram, label the parts of a letter
(condition) *(task)*
with 100% accuracy.
(standard)

Given a telephone message and a message form, record the
(condition) *(task)*
message. All the necessary information should be recorded
(standard)
in the proper spaces.

PERFORMANCE OBJECTIVE FORM

Directions: Complete this form for each task.

TASK CODE (taken from the Task List): ______________________________

TASK STATEMENT: ____

____

CONDITION: ____

____

____

____

____

STANDARD: ____

____

____

____

____

PERFORMANCE OBJECTIVE STATEMENT:

LEARNING ACTIVITIES

In many ways Learning Activities are the core of competency based education. It translates the expected goals of the performance objective into learning that results in real behavioral change on the part of the student. Learning Activities tell the student just what will need to be done to achieve the objectives and master the necessary skills. If the learning activities are well thought out and clearly implemented, the student will learn and will be able to perform the specified skills.

It is essential that the selected learning activities be designed to lead directly to the specified task. They should include everything a student needs to know or be able to do to reach the objective. It will not be assumed that the student will somehow fill in the gaps by asking around, watching somebody else, or making some good guesses. If the student needs to develop a physical skill, the student will be shown the skill and be given the opportunity to practice until the performance has been perfected. If the student is to produce something, he/she will be told what to produce and how to go about it.

At the same time, the learning activities must not include extraneous matter and must not give students an assignment with the vague idea that somehow it will do them good. Readings should be to-the-point, laboratory assignments should be carefully limited to what the student must be able to do, and the practice exercises should concentrate on the requisite skills. As learning activities are devised, they will have to be constantly checked against the performance objectives to make sure they lead directly to student competence and the achievement of the objectives.

Most curriculum materials will include a *knowledge* component and a *skills* component in some form. Depending on the occupational area and the learning strategy involved, most learning sequences will begin with experiences designed to increase awareness and provide the necessary foundational knowledge. This knowledge (or cognitive) component will include a grasp of terminology, facts, data, and other information related to the task.

The next activity (or several activities) will present the student with the skills involved and provide opportunity to practice the skills at different levels of complexity and difficulty. The first practice may be isolated and simple. (For example: "Practice using the hand wood-plane on a scrap piece of wood until you achieve a smooth, straight cut and a continuous chip.") Later practice may require more complex use of the skill under more demanding conditions. (For example: "Plane all six sides of a board, keeping each square with the other, and within specified dimensions.")

The final learning activities should provide experience as close to the real world and the criteria of the performance objective as possible. The balance of knowledge and skills compenents will depend greatly on the subject matter. The student of electronics who is learning to deal with Ohm's Law will need to learn a great deal of terminology, abstract concepts, and theory, while the computational skills involved may offer little that is new. The relative amount of stress to be placed on the knowledge and skills compenents depends on the objectives and must be controlled strictly.

Frequently instructors fall into a pattern of using only two or three kinds of learning activities in their instructional strategies. This is understandable because they are familiar with these few tactics, know that they usually work, and feel comfortable with them. The students, however, may suffer from learning activites that are unsuitable for them, that lack a variety of mental or physical challenge, or that are just plain boring. Learning can be increased by utilizing a wide variety of learning activities to suit a range of students' learning styles and personal interests.

SUGGESTIONS FOR LEARNING ACTIVITIES

The following section describes a number of kinds of learning activities that are suitable for use. Some specific examples are also given. These suggestions are not meant to be all inclusive, but are presented to stimulate the instructor's own creative thinking.

1. Readings from textbooks of short, relevant sections dealing specifically with the knowledge required to reach the objective. This may be a single reference or may be given as alternative references from different books.
2. Examination or data-gathering from standard reference books of the vocational field, (e.g., Machinery Handbook, Graphic Standards, or Reference Manual for Office Personnel).
3. Completion of a section of a programmed text or other programmed material.
4. Reading of special materials available in the school library (e.g., books, encyclopedia articles, periodical articles from bound volumes, etc.).
5. Solving of practice problems in the skills component (computational problems, exercises, etc.).
6. Viewing or listening to audio or audiovisual materials, (e.g., slide/tapes, audiotapes, filmstrips, illustrations, models, mock-ups).
7. Observing or operating models, mock-ups or dummy set-ups to gain an understanding of mechanisms or operating controls (e.g., plastic mock PBX board, rotary engine, set-up of electrical circuit, practice key board).
8. Roleplaying of performance in a simulated situation. Students may take the principal role of the practitioner or the participating role of the customer, the assistant, the audience, etc. These should be final learning activities.
9. Real-life performances, where the students function for short periods of time under controlled conditions in an actual work situation or a situation very close to real, (e.g., conducting a story time at a child-care center, setting up equipment in a surveying team). These also should be final learning activities.
10. Observing the skilled vocational worker in a real work situation. This should be done with specific goals in mind, usually with some form of guide, observation instrument, or report form which will give structure and reason for the observation period.

11. Vidotaping of student performance that can be viewed and used by the student to evaluate and improve his/her performance.

12. Simulation experiences in which a student goes through a "dry run" of the performance with the conditions controlled and consequences minimized, "Case Studies" in which students write their reactions and responses to the given situation are also considered simulation experiences (e.g., working with dummy patient in health care, a model head in cosmetology; disassembling and assembling a nonfunctioning aircraft engine).

13. Small-group experiences, for students who are at closely related points of achievement can get together to discuss, plan, or evaluate their work (e.g., discuss results of observation, plan for role-playing sessions, evaluate the instructional value of their activities).

14. Large-group experiences such as a class discussion by instructor and students.

15. Instructor demonstration of an operation. There may be instructional situations in which the only solution is for the instructor to personally perform the operation and describe it as students observe. This may be on an individualized, small-group, or large-group basis.

16. Guest speakers or outside experts. These classroom experiences may be listed and may be scheduled by the teacher at a time when the students are ready for the experience. Usually the nature of the topic is such that the class can benefit, even through all students may not be at that exact point in their learning.

17. Production or construction of projects or services. These must directly contribute to the objective; therefore, they must be carefully designed and assigned, limited in scope, and require a specific amount of time (e.g., do a complete manicure on a fellow student; construct a W truss; make working drawings of a flating footing; make a skirt with a zipper; decorate a cake with icing).

18. Problem-solving activities. Some objectives may require solving the problem involved in given situations. These may be relatively short experiences (e.g., prepare a luncheon menu for a particular group) or quite long-term jobs (e.g., design a vacation cottage for a family of four in a mountain setting). In problem-solving activities, it is very important that the student possesses the requisite skills, that he/she has access to the information necessary to solve the problem, and that the problem does not go beyond the performance objective.

19. Skills practice exercises. Some skilled operations may require that the student not only be able to do them smoothly and flawlessly every time. Learning activities may therefore specify practice periods in terms of time, number of repeated experiences, or quantity of production (e.g., make welds without a rod for two hours, produce ten perfect buttonholes; take dictation in shorthand).

20. Memorization. The performance objective may require or suggest that the student can best function if he/she has committed some information to memory. This is a legitimate learning activity (e.g., memorize the table of metric measures; memorize the Gregg characters; memorize the formula for lathe speeds; memorize a list of technical terms).

21. Collecting activities. Some performance objectives may be reached by asking students to gather and collect real objects so as to become familiar with their characteristics, the variety available, the settings in which they may be found (e.g., make a collection of metal fasteners, building materials, local lawn weeds, children's street games, newspaper classified ads).

22. Scaled-down performance. If the real performance is large in physical size, complex because of the number of participants, or consumes a quantity of expensive materials, a limited performance or a scaled-down situation may give the student a better chance of gaining confidence or success and may be more instructionally efficient and practical. (Examples of scaled-down experiences are: teach an outdoor game to two children, construct a scale model of a built-up roof construction, lay out an irrigation system on a land contour model, build a corner of a block wall.)

23. Performing experiments in the laboratory. Assign the student specific experiments to perform with specified equipment and processes. Have him/her observe the results and report or utilize them in some way.

24. Writing of technical reports, reactions to case studies, reports for class discussion, etc. This activity may be particularly valuable in the technical areas.

25. Preparing visual materials. Gather information and produce diagrams, schematic drawings, charts, graphs, topographic maps, contour maps, graphic solutions, structural drawings, styling illustrations, layouts, design sketches. Activities of this type are usually interesting to students, add variety to the learning experience, and tend to reinforce learning.

26. Planning experiences. Performance objectives may require that the student learn how to plan the job or operation. Planning may include selecting or designing the job, developing a sequence of procedures, figuring materials and costs, noting checkpoints and safety cautions, devising evaluation standards, etc.

27. Critique or evaluate experiences. In these, the student is asked to rate or evaluate an example of a finished product or service, or to make a critical analysis of a performance of a specified skill. The object of the evaluation may be a sample product, the work of a fellow student, the student's own work, a film or videotape of a performance. The final result may be a rating sheet, written report, or oral report.

28. Cooperative student experiences. Many occupational tasks involve teamwork, and it is proper for the learning activities to incorporate this. Activities that involve heavy lifting, cooperative production techniques, worker interaction, or that usually require a team approach in the occupation are places where cooperative student experiences are applicable.

RECOMMENDATIONS ABOUT LEARNING ACTIVITIES

1. Readings must be directly related to the objective--the writer should not require the reading of a whole chapter just because it would be good to know, when a page or two is all that is really necessary.

2. Viewing motion picture films on an individual-student basis is usually not feasible because of the difficulties of arranging for the film, projector, and viewing room. The use of overhead transparencies may still be helpful in some situations, especially if good ones are already available. The equipment is not difficult to use.

3. Observation experiences should be directly pointed toward the performance objective and not undertaken simply in the hope that somehow the experience will increase learning. Observation time must be reasonably short. Arranging for observation time must not be embarrassing or difficult for the student, or time consuming for the teacher.

4. Every vocational teacher should be concerned with the improvement of student communication skills.

CBVE
LESSON PLAN

____
DATE

SUBJECT - ____________________ TEACHER - ____________________

TITLE OF LESSON - ____________________ TIME PERIOD - __________

MAT. NEEDED BY TEACHER - ____________________

MAT. NEEDED BY STUDENT - ____________________

LESSON REFERENCES - ____________________

TASKS ADDRESSED - ____________________

- -

I. PERFORMANCE OBJECTIVES

- -

II. LEARNING ACTIVITIES

1. INTRODUCTION/MOTIVATION

CONTINUED ON BACK

2. PRESENTATION

3. APPLICATION

- -

III. EVALUATION

TEST CONSTRUCTION GUIDELINES FOR MULTIPLE-CHOICE ITEMS

1. Be sure each item deals with an important aspect of the content area and not with trivia. Item content should be accurate and up-to-date.

2. The stem of the item should clearly formulate a problem. Include as much of the item as possible in the stem keeping the response options as short as possible. Include only the material needed to make the problem clear and specific. Don't add extraneous information.

3. Be sure that each item is independent of all other items. The answer to one item should not be required as a condition for answering the next item, nor should a hint to one answer be unintentionally embedded in another item.

4. Avoid stereotyped phraseology including gender pronouns.

5. Include all qualifications needed to provide a reasonable basis for response selection.

6. Be sure that the item is directly related to a task.

7. Keep the reading difficulty and vocabulary level as simple as possible.

8. Avoid replication of a textbook in writing test items; don't quote directly. Taken out of context, direct quotes from a text are often ambiguous.

9. Avoid trick or catch questions.

10. Avoid abbreviations, unless the abbreviation is a commonly accepted industry abbreviation.

11. Art work should be line drawing and clearly labeled.

12. Use negative questions or statements only if the knowledge being tested requires it. In most cases, it is more important for the examinee to know what a specific item of information is rather than what it is not. If an item must be stated negatively, underline the negative word.

13. Include four options, arranged in a logical order, if one exists (e.g., numerical, ascending or descending order, alphabetical).

14. Be sure that there is one, and only one, correct or clearly best answer on which experts would agree.

15. Be sure wrong answer choices (distractors) are plausible.

16. Eliminate unintentional grammatical clues (word clues) and keep the length and form of all the answer choices similar. Grammatical inconsistencies such as "a," or "an" give clues to the correct answer. Avoid clues in either the stem or the response(s) that will give away a/the correct answer. These include length, specificity, unwitting reference to item which immediately precedes or follows.

17. Avoid using words such as "always," "only," and "never" that may give away a wrong answer. Whenever possible, avoid using best or most or first or last or least or worst. If you must use one, underlining it might assist the student in answering that item.

18. Avoid consistent preference for any particular response position for the correct answer.

19. With an open stem, requiring that the response completes the statement, use no punctuation mark at the end of the stem. Use a period at the end of each response. The first word of each response is not capitalized.

20. With a closed stem, requiring that the response is independent of the stem, end the stem with the appropriate punctuation, period or question mark. The first word of each response is capitalized and there is no end punctuation (period).

21. Brand names should not be used. Questions should be generic, so that knowledge of a particular item, machine, etc., is not required.

TEST ITEM WORKSHEET

Writer ______________________ Date ______________

Program Title ______________________ DOT Code ______________

Occupational Title ______________________

ITEM CODE

Duty Area ____ Task Number ____ C-1 ____ C-2 ____ Angoff ____ Answer ____

STEM: ______________________

RESPONSES: ______________________

A. ______________________

B. ______________________

C. ______________________

D. ______________________

ARTWORK: Yes ____ No____ (Code and attach to form)

REVIEWER: ______________________ **DATE:** ____________

TEST ITEM NUMBER: ______________

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Counseling Tools

ASSESSMENT LINK

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for the Career Information System

Testing and Assessment Link

Fashioning a career is a life-long process in which a person meshes personal attributes and needs with educational and employment opportunities. Frank Parsons, commonly identified as the father of vocational counseling, put it this way:

> *In the wise choice of a vocation there are three broad factors:*
>
> (1) *a clear understanding of yourself, your aptitudes, abilities, interests, ambitions, resources, limitations, and their causes;*
>
> (2) *a knowledge of the requirements and conditions of success, advantages and disadvantages, compensation, opportunities, and prospects in different lines of work;*
>
> (3) *true reasoning on the relation of those two groups of facts.* (Frank Parsons, Choosing a Vocation, Boston: Houghton-Mifflin, 1909)

There are many ways to develop an understanding of oneself, just as there are many ways to gain knowledge of different lines of work. Among the ways to gain insight into personal aptitudes, abilities, and interests is taking standardized tests. Among the various ways to learn about educational and occupational requirements and opportunities is using the Career Information System.

Assessment Link connects test results to career information, facilitating the "true reasoning" Parsons said is essential. The idea behind Assessment Link is to help a person get information about the occupations whose titles appear on a test report. With Assessment Link, a person marks test occupations and the program lists the corresponding CIS occupational titles. By performing this technical task, Assessment Link ensures the user of finding appropriate information, so it encourages users to explore occupations in more depth.

Steps in the Testing Process

Standardized assessment instruments serve to measure or clarify people's personal attributes. One of the strengths of such instruments is that they examine a single personal domain, usually interests or aptitudes, in depth. Tests are good tools to use with people who need to know more about one of their personal attributes.

In career counseling, the term "test" presents some problems, because people associate it with school tests, right or wrong answers, and passing or failing grades. Some tests, such as aptitude tests, can serve two purposes. They are used by employers and schools to screen people into or out of employment and courses; however, they are also used in a different context to help people plan their careers. Interest inventories, on the other hand, are designed specifically for career counseling; they are not used by organizations to evaluate the individual, but by the individual to identify fields of interest. The fundamental difference between evaluation and counseling is in the use, not in the instrument. As Donald Zytowski observes, in career development the test taker is the test user. Many career counselors prefer the term "assessment instrument," but the term test is often used broadly in textual material, as it is here, to simplify the language.

The assessment process has several steps: selecting an instrument that is appropriate for the user, administering it carefully, scoring it, and interpreting the results to the user. Test interpretation leads either to additional assessment or to occupational exploration.

Test selection, administration, and scoring require special preparation. The Standards for Educational and Psychological Testing state that:

> *Responsibility for test use should be assumed by or delegated only to those individuals who have the training and experience necessary to handle this responsibility in a professional and technically adequate manner....* (Standard 6.6)

Any good assessment instrument also requires and deserves a good interpretation. In the section on test administration, scoring, and reporting, the Standards for Educational and Psychological Testing say:

> *Those responsible for testing programs should provide appropriate interpretations when test score information is released to students, parents, legal representatives, teachers, or the media. The interpretations should describe in simple language what the test covers, what scores mean, common misinterpretations of test scores, and how scores will be used.* (Standard 15.10)

Assessment Link is not a substitute for test interpretation; it picks up where test interpretation ends. After the user fully understands the meaning of the test results, the person may need further assessment or may be ready to explore some occupations. Assessment Link comes into play when the user is ready to shift from introspection to an examination of occupational opportunities and requirements.

Assessment and Occupational Exploration

Testing is one way to identify personally relevant occupations, but there are actually several ways: informal methods, career development activities, QUEST, and standardized assessment instruments.

Informal Methods

Most people identify occupational options informally, by observing people doing interesting work, by reading or hearing about a new field, by developing a strong personal interest or talent, or by looking for a way to contribute to an important cause. People who have a good idea about what they want to do usually make the most career planning progress by getting information. However, they may later use a test to confirm their interests or abilities, and they may use QUEST to see if there are other options that meet their needs.

Career Development Activities

There are many counseling, guidance, instructional, and job search activities that help people clarify their understanding of themselves and identify career options. These activities range from classroom techniques for showing the occupational relevance of mathematics to activities that reveal personal preferences. These organized but informal activities often use just a small piece of the Career Information System; many are described in the CIS Implementation Handbook, in Reducing the Risk: Using Career Information with At-Risk Youth, and in Schoolwork, Lifework, Integrating Career Information into High School Career Development Programs.

QUEST

QUEST is a good tool for people who know their interests, abilities, and work preferences but do not know the job market well. Such people need to find out which occupations utilize the personal attributes they have identified, and what benefits there may be to further education, geographic mobility, and other career-related decisions. QUEST builds on the facts people already know about themselves. Much of QUEST's strength lies in its simultaneous attention to personal interests, abilities, work preferences, capacity for schooling, and to logistical factors such as financial needs and geographic location.

Standardized Assessment Instruments

Most assessment instruments produce lists of occupations as well as providing various scores for the person. These occupational lists provide starting points for occupational exploration, but users need to look carefully at other requirements before choosing one of the occupations suggested by a single test. They should not, as they too often do, think the assessment instrument prescribes what they should do.

The Standards for Educational and Psychological Testing encourage broad-based assessment to avoid this tendency of test takers to "attach unsupported surplus meaning to test scores."

> *Counselors should review the test materials that are provided to the test takers to be sure that such materials properly caution the test taker not to rely on the test scores solely when making life-planning decisions. The counselor should encourage the test taker to consider other relevant information on personal and social skills, values, interest, accomplishments, experiences, and on other test scores and observations.* (Standard 9.6)

After completing an assessment, especially if the assessment involved only one personal domain such as interests or abilities, the user must study carefully the full range of requirements and benefits of an occupation. Every major career assessment instrument developer recommends that test users examine occupational information after studying the test results, and CIS is a good place to begin that study. Assessment Link helps locate the relevant files.

Tests and QUEST

Tests can be used instead of QUEST as a way of identifying potential occupations. In such situations, Assessment Link makes the crucial connection between the test results and comprehensive information about the requirements and rewards of the occupations identified by the instrument.

QUEST itself is not a test. Instead, QUEST is a questionnaire, which provides a way to report preferences the person already knows. For this reason, tests and QUEST can also be used in tandem: the test to clarify a person's attribute, and QUEST to integrate those results with other interests, aptitudes, preferences, and career choice variables.

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Assessment Link and CIS Files

In addition to obtaining information about occupations covered by an assessment instrument, a person can use CIS to find additional occupations to explore. The CIS lists of related occupations often contain occupations that the test does not cover. Those additional occupations are occupations with similar functions, so they may be relevant to the person's occupational exploration; however they might or might not yield aptitude test or interest inventory scores like those of occupations for which scales have been measured.

Tests in Assessment Link

This first edition of Assessment Link covers three interest inventories:

Career Assessment Inventory (CAI)
Self-Directed Search (SDS)
Strong Interest Inventory (SII)

These instruments were chosen to begin with because they are widely used and have received favorable psychometric and guidance reviews. There are other good instruments, and they can be added. (See the section entitled "Information on the Tests" for more information.)

LINK: ABOUT TESTS

Tests are like yardsticks and scales; they are for measuring. Tests try to measure someone's knowledge, abilities, interests, or other attributes by asking carefully worded questions. Of course, the measurement is only as good as the questions asked ... and the answers that the person gives.

Tests are used in several ways. Schools and employers use tests in admissions, course grading, hiring, and other screening and placement decisions that they have to make. Individuals can use them in making personal plans, too.

Tests used in career counseling are often called "assessment instruments." In counseling, they are not used to evaluate a person; instead they are used to help assess career prospects. You and your counselor use the results--along with other information and ideas--in planning your career. You are both the test taker and the test user.

Most vocational assessment reports compare your scores to the scores of other people and tell you how you compare, for example to people who work as opticians. Such comparisons are hard to draw, but they make test results easier to use.

It helps to know whether your interests are like those of people who are opticians, but an interest inventory can't tell you if you have the necessary manual and visual abilities to do a good job. A test can help you understand one aspect of yourself, but it won't tell you what to do. That is a decision you need to make yourself, and it requires more information than one test can provide. You need to consider your various interests and abilities and the opportunities that are available. Assessment Link and the rest of the Career Information System will provide you information about work and schooling.

= = = = = = = = = = =

ASSESSMENT LINK shows the connection between the titles used in a test and the titles used in the Career Information System. Some are the same, but others differ. Assessment Link finds the closest CIS occupations.

In ASSESSMENT LINK, you use the down-arrow or up-arrow key to mark your selection.

Any time you want HELP or information, use the "F1" key.

To back up to the PREVIOUS SECTION, use the "Esc" key.

. . . Now, press: **RETURN**

Strong Interest Inventory (SII)

The Strong Interest Inventory is designed to help people make occupational decisions by identifying patterns in their likes and dislikes, and by showing how their patterns compare with those of people in various occupations. The test booklet asks whether the person likes or dislikes various occupations, school subjects, activities, leisure activities, types of people, preferences, and personal characteristics. The test scoring program uses the responses to these familiar items to predict interest in unfamiliar activities. The SII report shows how closely a person's interests match those of people who work in various occupations.

MEASUREMENT: The Strong Interest Inventory measures occupational interests. A high score for an occupation suggests similar interests between the person taking the SII and people working in the occupation. A low score suggests a lack of similar interests. The SII is not intended to measure abilities or intelligence, however.

The Strong is respected by many psychologists for its long history and the continuing research on workers' interests.

LATEST EDITION OF THE TEST: 1985 (The Strong Interest Inventory was formerly called Strong-Campbell Interest Inventory.)

OCCUPATIONS COVERED: The SII presents scores for 106 occupations, mostly based on samples of 200 to 300 members of associations, unions, and other occupational organizations. The occupations are oriented toward professional and business fields; two thirds of the occupations require college degrees or are mostly filled by people who have college degrees. The other third are a sampling of large craft, service, and military occupations.

The Strong also presents scores for general occupational areas and for several basic interest groups.

USES: The Strong Interest Inventory can help a person understand how personal likes and dislikes fit into the world of work. Occupations with high scores are occupations to examine further.

Low scores can help identify areas where a person's interests are unlike those of people in an occupation. In such situations, a person can change plans, try to develop an interest in the things that are important to people in the occupation, or look for a specialty of the occupation that requires less of the low interest activity.

In addition to interests, a person's abilities, values, personality, and other factors are all important in making career decisions. The authors of the Strong Interest Inventory also encourage people to search out as much information as possible about occupational areas where the person's interests and abilities are focused. They point out that choosing an occupation is not a single decision, but a series of decisions that will go on for many years.

ADDITIONAL INFORMATION: This information is based on the following publication, which contains additional useful information.

Hansen, Jo-Ida C., and Campbell, David P. "Manual for the SVIB-SCII Strong-Campbell Interest Inventory." Palo Alto, California: Stanford University Press and Consulting Psychologists Press, 1985.

Career Assessment Inventory (CAI)

The Career Assessment Inventory is designed to help a person determine whether he or she would be satisfied in a particular occupation or field of work. To do so, the Career Assessment Inventory asks about the person's interests in activities, school subjects, and occupational titles. Then the scoring program compares the person's answers to answers given by people who work in the various occupations. The results point out occupations where the person's interests do and do not match those of people working in those occupations.

MEASUREMENT: The CAI assesses a person's interests, compared to working people. A high score for an occupation suggests similar interests between the person taking the CAI and people working in the occupation. A low score suggests a lack of similar interests.

The CAI does not measure aptitudes or skills.

LATEST EDITION OF THE TEST: Vocational Version: 1982
Enhanced Version: 1986

OCCUPATIONS COVERED: The Vocational Version of CAI is oriented toward occupations that normally require high school, vocational school, or college schooling, but not post-graduate degrees. The Vocational Version presents scores for 91 occupations.

The Enhanced Version of CAI has 111 occupational scales. It includes almost all the occupations that are in the vocational version plus some professional occupations that normally require advanced college degrees.

Each occupational scale compares the test taker's answers to the answers given by one hundred to two hundred people in the occupation. The people included in the sample have the standard credentials for the occupation, have worked in the occupation at least two years, are less than 70 years old, and say they like their work. Most are members of a union or other occupational association.

USES: The author of the Career Assessment Inventory, Dr. Charles B. Johansson, says a person should use the CAI results as guidelines in understanding occupational interests. Dr. Johansson recommends that people also consider skills, accomplishments, experiences, other test scores, and so forth. He says people should look at a wide variety of occupations and use their scores as guides for further career exploration and thinking.

ADDITIONAL INFORMATION: This information is based on the following publications, which contain additional useful information.

For the Vocational Version: Johansson, Charles B., "Manual for Career Assessment Inventory," Second Edition. Minneapolis, Minnesota: National Computer Systems, 1982.

For the Enhanced Version: Johansson, Charles B., "Career Assessment Inventory--The Enhanced Version." Test manual. Minneapolis, Minnesota: National Computer Systems, 1986.

Self-Directed Search (SDS)

The Self-Directed Search is designed to show a person's "personality type" and to identify corresponding types of "occupational environments." Using a short workbook, a person indicates interests and competencies. The workbook then provides instructions for determining a personality-type code. Another booklet, the "Occupations Finder" lists occupations in the same categories.

MEASUREMENT: The SDS measures a person's personality type. Personality types are identified by three-letter codes, which indicate the dominant three of the following six categories:

Realistic (R)	Social (S)
Investigative (I)	Enterprising (E)
Artistic (A)	Conventional (C)

The SDS does not measure aptitudes or skills.

LATEST EDITION OF THE TEST: 1985

OCCUPATIONS COVERED: The SDS lists occupations by the same categories it uses for personality types. It covers most professional, business, and scientific occupations. It covers skilled trades, production, and service occupations also, but less extensively.

Assessment Link connects SDS categories to CIS occupational categories. The "Occupations Finder" booklet lists specialties for the same occupations.

USES: Dr. John L. Holland researched the six-area model and developed the Self Directed Search. His idea was to provide a vocational counseling experience for people who do not have counselors or who prefer to explore occupational options themselves.

It is a good idea for a user of the SDS to double-check the arithmetic in the SDS workbook, because an error can lead to a wrong summary code. If the SDS scoring seems difficult or the results are hard to interpret, some psychologists say a person should get a counselor to help in determining the personality type code from the SDS. Counselors who are thoroughly familiar with the SDS can help interpret the results and can help find appropriate occupations.

Dr. Holland encourages people to look at occupations with every possible arrangement of their three-letter codes; that will broaden their occupational searches. He also says people should not base their career plans on the results of the SDS alone. He likes people to check their SDS results with their friends and get information about occupations and educational programs from a variety of sources before ruling out an interesting occupation or making other career decisions.

ADDITIONAL INFORMATION: This information is based on the following publications, which contain additional useful information.

Holland, John L., "The Self-Directed Search - Professional Manual - 1985 Edition." Odessa, Florida: Psychological Assessment Resources, 1985.

Holland, John L., "1987 Manual Supplement for the Self-Directed Search." Odessa, Florida: Psychological Assessment Resources, 1987.

CONCEPTUALIZATION OF ASSESSMENT WITHIN A COMPREHENSIVE CAREER DEVELOPMENT PROGRAM

***Guidance Curriculum*: This is the center of the developmental part of a comprehensive career development program.**

Assessment can get counselors involved within the classroom.

The assessment process can be a useful component of a career education class/unit within an instructional sequence.

Group administration allows the counselor to efficiently serve students.

***Individual Planning*: This must be provided for all students and is intended to assist students in the development and implementation of their personal, educational, and career plans, and goals.**

Assessment can provide a place to start.

Assessment can reinforce current plans and knowledge.

The assessment process can generate new information for the student, counselor, teacher, parent, etc.

Assessment can strengthen hunches and actions with objective data.

Assessment can facilitate action by offering an informational base and a structure in which to "move".

Assessment may facilitate the pulling together of present understandings.

***Responsive Services:* Provide special services to help students who face problems that interfere with their health, personal, social, career, or educational development.**

Assessment can provide a positive intervention for the "stuck" student.

Assessment can encourage exploration, flexibility, or comfort and introduce multipotentialities.

Assessment can offer a "safe" place to stretch, modify, or alter present boundaries.

***System Support*: Includes both those activities necessary to support the previous three areas and activities implemented by guidance staff to support other educational programs and staff.**

Assessment can open communications with the home.

Assessment can be offered to staff as well.

Assessment results can be linked to CIS and thus facilitate exploration and other educational program activities.

Assessment can provide a niche for counselors in their school.

Assessment can be done within the classroom.

Assessment can be used to demonstrate program accountability.

From Desiging Careers, by Norm Gysbers, 1988 and A Counselor's Guide to Career Assessment, by Kapes & Mastie, 1988

IMPORTANT POINTS TO REMEMBER ABOUT ASSESSMENT INSTRUMENTS AND THE ASSESSMENT PROCESS

Assessment instruments are like **structured interviews** which provide information in an efficient manner

Assessment instruments are often misconstrued **by users as** magically **providing answers**; this is a danger

The measurement is only as good as the question asked and the answer given

Career assessment results are used for **helping individuals make plans** versus for screening or placement, like test results

Assessment instruments **do not tell you what to do or be**; they compare you, for example, to others who **work in** a particular occupation

To select and use an assessment instrument **you need** both **an understanding of psychometric** concepts and **resources** available for administration, scoring and interpretation

Interpretation is a critical, time-consuming, and key part of the assessment process

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Code of Fair Testing Practices In Education

Prepared by the Joint Committee on Testing Practices

The Code presents standards for educational test developers and users in four areas:

A. Developing/Selecting Tests
B. Interpreting Scores
C. Striving for Fairness
D. Informing Test Takers

The Code is intended to be consistent with the relevant parts of the *Standards for Educational and Psychological Testing* and is meant to be understood by the general public; it is limited to educational tests; and the primary focus is on those issues that affect the proper use of tests.

The Code addresses the roles of test developers and test users separately. Test users are people who select tests, commission test development services, or make decisions on the basis of test scores. Test developers are people who actually construct tests as well as those who set policies for particular testing programs.

A Developing Selecting Appropriate Tests*

Test developers should provide the information that test users need to select appropriate tests.	***Test users should select tests that meet the purpose for which they are to be used and that are appropriate for the intended test-taking populations.***
Test Developers Should:	**Test Users Should:**
1. Define what each test measures and what the test should be used for. Describe the population(s) for which the test is appropriate.	1. First define the purpose for testing and the population to be tested. Then, select a test for that purpose and that population based on a thorough review of the available information.
2. Accurately represent the characteristics, usefulness, and limitations of tests for their intended purposes.	2. Investigate potentially useful sources of information, in addition to test scores, to corroborate the information provided by tests.
3. Explain relevant measurement concepts as necessary for clarity at the level of detail that is appropriate for the intended audience(s).	3. Read the materials provided by test developers and avoid using tests for which unclear or incomplete information is provided.
4. Describe the process of test development. Explain how the content and skills to be tested were selected.	4. Become familiar with how and when the test was developed and tried out.
5. Provide evidence that the test meets its intended purpose(s).	5. Read independent evaluations of a test and of possible alternative measures. Look for evidence required to support the claims of test developers.
6. Provide either representative samples or complete copies of test questions, directions, answer sheets, manuals, and score reports to qualified users.	6. Examine specimen sets, disclosed tests or samples of questions, directions, answer sheets, manuals, and score reports before selecting a test.
7. Indicate the nature of the evidence obtained concerning the appropriateness of each test for groups of different racial, ethnic, or linguistic backgrounds who are likely to be tested.	7. Ascertain whether the test content and norm group(s) or comparison group(s) are appropriate for the intended test takers.
8. Identify and publish any specialized skills needed to administer each test and to interpret scores correctly.	8. Select and use only those tests for which the skills needed to administer the test and interpret scores correctly are available.

*Many of the statements in the Code refer to the selection of existing tests. However, in customized testing programs test developers are engaged to construct new tests. In those situations, the test development process should be designed to help ensure that the completed tests will be in compliance with the Code.

B Interpreting Scores

Test developers should help users interpret scores correctly.	*Test users should interpret scores correctly.*
Test Developers Should:	**Test Users Should:**
9. Provide timely and easily understood score reports that describe test performance clearly and accurately. Also explain the meaning and limitations of reported scores.	9. Obtain information about the scale used for reporting scores, the characteristics of any norms or comparison group(s), and the limitations of the scores.
10. Describe the population(s) represented by any norms or comparison group(s), the dates the data were gathered, and the process used to select the samples of test takers.	10. Interpret scores taking into account any major differences between the norms or comparison groups and the actual test takers. Also take into account any differences in test administration practices or familiarity with the specific questions in the test.
11. Warn users to avoid specific, reasonably anticipated misuses of test scores.	11. Avoid using tests for purposes not specifically recommended by the test developer unless evidence is obtained to support the intended use.
12. Provide information that will help users follow reasonable procedures for setting passing scores when it is appropriate to use such scores with the test.	12. Explain how any passing scores were set and gather evidence to support the appropriateness of the scores.
13. Provide information that will help users gather evidence to show that the test is meeting its intended purpose(s).	13. Obtain evidence to help show that the test is meeting its intended purpose(s).

C Striving for Fairness

Test developers should strive to make tests that are as fair as possible for test takers of different races, gender, ethnic backgrounds, or handicapping conditions.	*Test users should strive to make tests that are as fair as possible for test takers of different races, gender, ethnic backgrounds, or handicapping conditions.*
Test developers should:	**Test Users Should:**
14. Review and revise test questions and related materials to avoid potentially insensitive content or language.	14. Evaluate the procedures used by test developers to avoid potentially insensitive content or language.
15. Investigate the performance of test takers of different races, gender, and ethnic backgrounds when samples of sufficient size are available. Enact procedures that help to ensure that differences in performance are related primarily to the skills under assessment rather than to irrelevant factors.	15. Review the performance of test takers of different races, gender, and ethnic backgrounds when samples of sufficient size are available. Evaluate the extent to which performance differences may have been caused by inappropriate characteristics of the test.
16. When feasible, make appropriately modified forms of tests or administration procedures available for test takers with handicapping conditions. Warn test users of potential problems in using standard norms with modified tests or administration procedures that result in non-comparable scores.	16. When necessary and feasible, use appropriately modified forms of tests or administration procedures for test takers with handicapping conditions. Interpret standard norms with care in the light of the modifications that were made.

D Informing Test Takers

Test Developers or Test User Should:

Under some circumstances, test developers have direct communication with test takers. Under other circumstances, test users communicate directly with test takers. Whichever group communicates directly with test takers should provide the information described below.

17. When a test is optional, provide test takers or their parents/guardians with information to help them judge whether the test should be taken, or if an available alternative to the test should be used.

18. Provide test takers the information they need to be familiar with the coverage of the test, the types of question formats, the directions, and appropriate test-taking strategies. Strive to make such information equally available to all test takers.

Test Developers or Test Users Should:

Under some circumstances, test developers have direct control of tests and test scores. Under other circumstances, test users have such control. Whichever group has direct control of tests and test scores should take the steps described below.

19. Provide test takers or their parents/guardians with information about rights test takers may have to obtain copies of tests and completed answer sheets, retake tests, have tests recorded, or cancel scores.

20. Tell test takers or their parents/guardians how long scores will be kept on file and indicate to whom and under what circumstances test scores will or will not be released.

21. Describe the procedures that test takers or their parents/guardians may use to register complaints and have problems resolved.

Assessment Instrument Catalog Publisher Information and Relative Prices

Career Assessment Inventory

"1989 Catalog: Tests & Scoring Services," National Computer Systems (NCS): Professional Assessment Services, P.O. Box 1416, Minneapolis, MN 55440. To order by phone call 1-800-627-7271.

Machine scoring cost: $2.90 for basic profile or $5.10 for narrative (quantities of 100 or more) includes question and answer sheet, scoring, and report.

Twenty-four hour turnaround time available.

Hand scoring is unavailable.

Strong Interest Inventory

"1989 Catalog: Tests: Books, Training Programs," Consulting Psychologists Press, (CPP), 577 College Avenue, Palo Alto, CA 94036-1490. To order by phone call 1-800-624-1765.

Machine scoring cost: $2.20 to $9.55, depending on report format and options selected, includes answer sheet, scoring and report. Test booklets, which are priced separately, are reusable and cost $8.75/25.

Turnaround time unavailable.

Hand scoring is unavailable.

Self-Directed Search

"1989 Full Catalog: Testing Resources for the Professional," Psychological Assessment Resources, Inc. (PAR), P.O. Box 998, Odessa, FL 33556. To order by phone call 1-800-331-8378.

Machine scoring cost: $6.00 to 7.50, depending upon report format and number ordered. Assessment booklets cost $0.84; reusable Occupations Finder booklets cost $0.78.

Turnaround time unavailable.

Hand scoring by counselee or counselor take only five minutes.

General Assessment Instrument Information

"A Counselor's Guide to Career Assessment Instrument," Kapes, Jereme T., and Mastie, Marjorie M., Second Edition. Alexandria, Virginia: American Assoc. for counselors and Development, 1988.

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Curriculum Alignment

Presenter
Harley Schlichting, Director
Instructional Materials Laboratory
University of Missouri
Northwest Conference
October 18-20, 1989

Instructional Alignment

Describes the extent to which stimulus conditions match among three instructional components:

(1) intended outcomes
(2) instructional processes
(3) instructional assessment.

- **What**

  to teach is a more difficult question to answer than **how** to teach, considering the fine-tuning demands of task analysis.

- **Lack of excellence**

  in American schools is not caused by ineffective teaching, but mostly by, misaligning what teachers teach, what they intend to teach, and what they assess as having been taught.

- **The expectations**

  that instruction causes a normal distribution of ability is apparently rooted in a belief in the inevitability of cognitive inequality of human beings. This belief is so all-pervading and insidious, that most teachers and administrators believe that to teach is unethical because it denies a law of nature.

- **Educators**

  try to avoid responsibility for what they teach. It is safe to be for teaching "literary appreciation," or "higher cognitive skills," or "aesthetic appreciation of art." However, it is dangerous to define these out comes by behavioral indicators or with formal assessments making them amenable to instructional alignment.

What's worth teaching?

That is the same question as:

What's worth assessing?

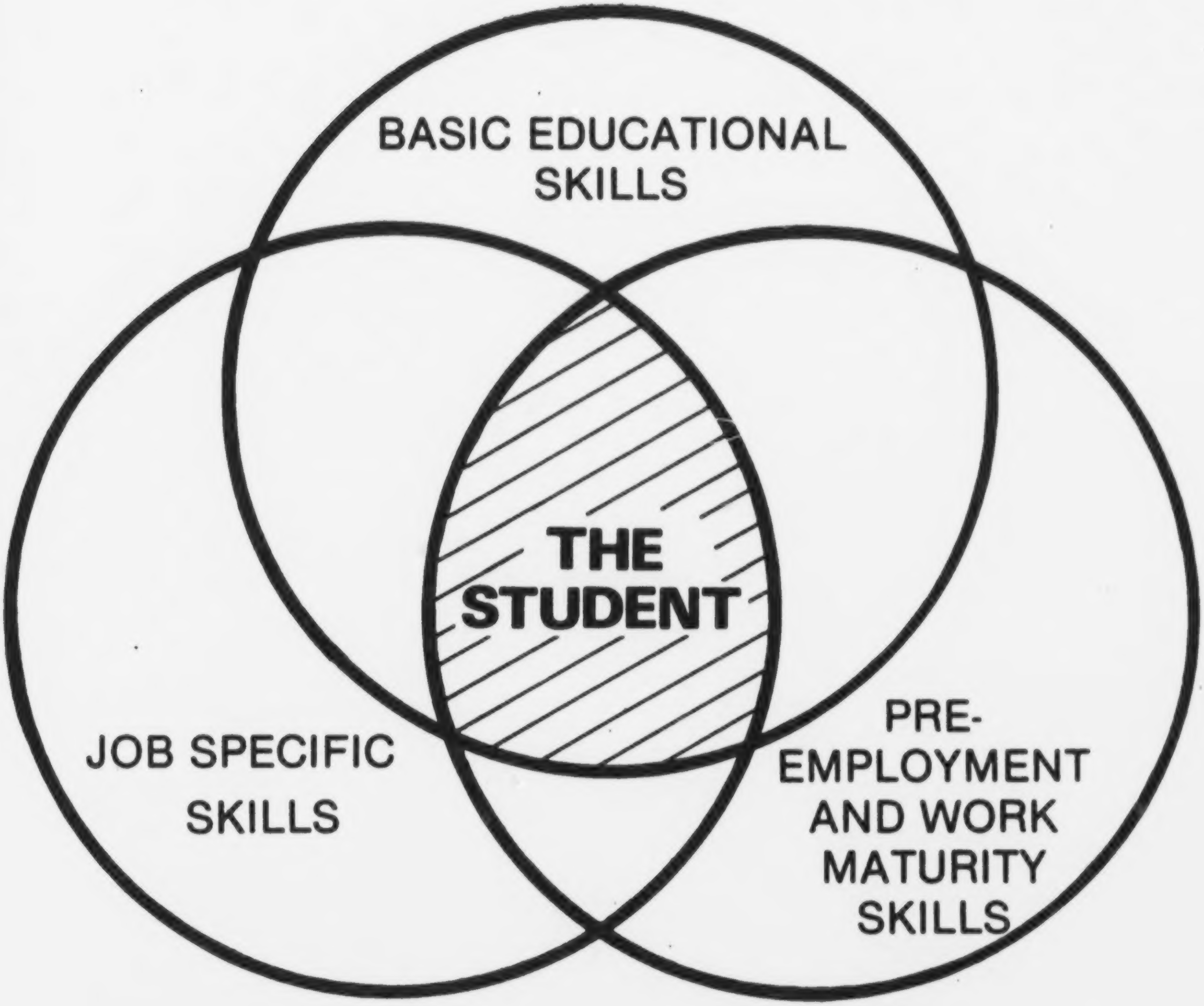
Outline

I. Elements of curriculum alignment

II. Selecting student outcomes

III. Assessing student outcomes

IV. Teaching to the predetermined student outcomes


BASIC EDUCATIONAL SKILLS
THE STUDENT
JOB SPECIFIC SKILLS
PRE-EMPLOYMENT AND WORK MATURITY SKILLS

Competency System Framework

National Academy of Science Competencies Employers Value

- Applied Vocational Skills
- Listening
- Computer Literacy
- Interpersonal Skills
- Reading
- Reasoning
- Scientific/Technical Principles
- Discipline
- Estimation Skills
- Writing

Introduction to Auto Body

Cross-Reference Table of Instructional Materials

Competency	Unit	Instructional Objective	Transparency Master	Handout	Assignment Sheet	Job Sheet	Test Item	Notes
A 1	I	1-I, 1-II					1-15	
A 2	I	2-I, 2-II					16-51	
B 1	II	1-I, 1-II		1	1, 2		1-20	
B 2	II	1-III, 1-IV			2, 3		21-35	
C 1	III	1-III--1-IV					1-78	
C 2	III	2-I--2-III					79-98	
C 3	IV	1-I--1-IV					1-43	
C 4	IV	2-I--2-IV					44-90	
C 5	V	1-I-1V			1		1-30	
D 1	VI	1-I		1			44-47	
D 2	VI	1-II		1			1-10	
D 3	VI	1-III		1			21-33	
D 4	VI	1-IV		1			34-43	
D 5	VI	1-V		1			11-20	
E 1	VII	1-I--1-III			1		1-15	
E 2	VII	1-I--1-III		1	2		1-15	
E 3	VII	1-I--1-III		2	3		1-15	

Instructional Alignment:

Searching for a Magic Bullet

S. ALAN COHEN

When critical features of instructional stimuli match those of assessment, effect sizes routinely *reach 1.2 to 3 sigma. An instructional psychologist recasts this classic problem of* stimulus control *as* instructional alignment. *This paper describes results of alignment studies that have dramatic implications for researchers and practitioners. One implication embraces the obvious validity of teaching to the test, but poses* what is worth testing *as instructional design's most awesome challenge.*

In the latest search for educational excellence, perhaps it's time to reconsider an old idea—instructional alignment. *Instructional alignment* describes the extent to which stimulus conditions match among three instructional components: intended outcomes, instructional processes, and instructional assessment (Cohen, 1984a).

The purpose of this paper is to present a new perspective of this old idea by (a) reviewing its history; (b) presenting new data demonstrating that instructional alignment generates larger effects in research and practice for less "cost" than other instructional constructs; and (c) positing implications for both school practitioners and researchers.

Historical Perspective

Carroll's claim that a fundamental component of effective instruction is the degree to which learners have a clear picture of the instructional outcome (Carroll, 1963) was consistent with the times. Those times were the early 1960s, when Skinner's ideas had generated intense interest in task analysis and behavioral objectives in instructional design.

In the applied arena, Skinner's influence on instructional design was best demonstrated in a system called *CRI* or *Criterion Referenced Instruction* (Mager & Pipe, 1974). CRI applied Pipe's servomechanism model (Pipe & Betz, 1971) in which part of output is fed back as input to modify process. According to Pipe, any instructional system must derive from a clear statement of outcome; instruction generates that outcome as demonstrated in a final assessment. The assessment results adjust the outcome, the process, or both until they equal the intended outcome.

CRI was designed to train teachers and other course designers. But it quickly became apparent that school practitioners would not abide the Pipe model. For example, CRI presents the identical task to be learned in both the instructional process as well as in the final assessment, an ideal way to insure the precise match among what is taught, what is measured, and what is intended to be learned. The effect is near perfect learning, with variation in learning rate rather than in "amount" of learning, as expressed in Carroll's model of school learning.

Unfortunately, CRI contradicted the conventional expectation of a normal distribution of assessment results. That distribution requires either poorly taught content, or assessments whose stimulus conditions differ from those taught in the instructional phase. Either option guarantees assessment score variance. CRI practically guaranteed competence, which eliminated or reduced variance, contradicting that conventional expectation.

Although talk of "criterion testing" echoed through the 1960s and 70s, the standard psychometric model nevertheless predominated, as it does today. That model requires variance for a test to demonstrate reliability and validity. Thus, a combination of psychometric necessity and a tradition of "not all shall pass through these gates" doomed CRI to economic failure in the conventional teacher training market. Mager wisely turned away from the schools to industry, government, and business, where it is routinely expected that instruction generates reduced variance. In that setting, CRI continues to flourish a quarter of a century later (Mager & Pipe, 1983).

Meanwhile, in the research arena, new instructional design models had begun to emerge from the Skinnerian bias. For example, as programmed instruction became the cutting edge of instructional psychology, Gilbert (1962) proposed that an efficient way to design effective instruction was to begin at the end. By first developing the final "frame" representing the program's criterion behavior, and working backward to the beginning of instruction, one was more certain that the intended outcome would occur. Although the term *alignment* was not used, Gilbert and his contemporaries recognized the critical role of defining criterion behaviors in terms of stimulus conditions, and that varying those stimulus conditions during instruction could be expected to cause variations from the intended outcome.

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By the mid 1970s, naive elements of programmed instruction had begun to disappear from the schoolbook market. However, its basic principles, especially task analysis, had become the norm for instructional design. For example, Resnick, Wang, and Kaplan (1973) published their classic task analysis of school mathematics learning. By the middle 70s, *task analysis* was a fixture of instructional design (Resnick, 1976; Resnick & Beck, 1976). Task analysts focused on two elements, the stimulus conditions of criterion behaviors, and instructional sequence. Instructional alignment applies these elements.

Although CRI failed to infiltrate the practical arena of public schools, the results of other behaviorists' task analyses caught the rising tide of federal funds targeting the disadvantaged (e.g., Cohen & Hyman, 1977; Cohen & Kaplan, 1975; Cohen & Mueser, 1972; Engelmann, 1970). Despite intense opposition by conventional educators, some American teachers got their first close look at published programs exemplifying the instructional alignment principle. However, their use was usually limited to compensatory and remedial education. These systems rarely became the school's basic programs, and as federal aid declined in the 1980s, such programs were seen less and less in the classrooms.

Thus, the term *instructional alignment* represents a well-established phenomenon in the history of instructional design. Conventional wisdom accepts the logic that effective instruction demands congruence between stimulus conditions of instruction and stimulus conditions of the criterion assessment. The assumption is that the criterion assessment is clearly the intended outcome.

Instructional Alignment Effects

We first spotted the potential of this conventional wisdom as a researchable construct while training doctoral students to routinely test their research hypotheses by predicting critical effect sizes (Cohen & Hyman, 1979, 1981). In a doctoral study of format factors of math word problems that cause difficulty, Cohen & Stover (1981) taught middle graders three types of manipulations to increase their success rates. After three 45-minute lessons, posttest differences exceeded 3.4, 2, and 1.5 sigma. The critical effect size considered educationally significant had been defined as .70 sigma. A statistically significant effect for the number of observations in this study was approximately .50 sigma. What struck us was the magnitude of the effect relative to the minimal instructional effort.

About this same time, evidence was piling up showing large effects in favor of mastery learning programs around the world (Block & Burns, 1976; Hymel, 1982). What struck us was not simply the validation of Bloom's claims about learning for mastery (Bloom, 1976), but the magnitudes of the effects.

We decided to seek a magic bullet—the most potent variable among many underlying mastery learning that contributed most to these observed effect sizes. We hypothesized that whatever its identity, it was also present in the Cohen and Stover study, in which the intervention was not intended to be an example of mastery learning. Although it is true that mastery learning tended to generate effects greater than one sigma, large effects were also common to other approaches to instruction such as tutoring (Bloom, 1984). We looked for a common thread across mastery learning, well-designed instructional experiments, and tutoring.

We noted that a critical feature of mastery learning is the creation of unit tests *before* designing the instructional program (Block, 1971, 1974; Block & Anderson, 1975). We suspected that such an outcome-driven instructional design would generate more aligned instruction than traditional approaches.

We noted that an instructional experiment done as a doctoral dissertation (as in the case of the Cohen-Stover study) would have had to survive close scrutiny by a faculty committee of instructional psychologists. The researcher would have had to satisfy the established criterion of internal validity known as *construct validity of the dependent variable* (Cook & Campbell, 1979). We suspected that dissertation review committees would be particularly sensitive to the necessary match between an experimental intervention and the measure of effect.

Finally, we noted that tutorials are generally efficient pedagogies. Time is rarely spent on classroom rituals; the outcome is defined and the tutor gets right to the task. In short, we thought instructional alignment was a common thread woven into the fabrics of all three phenomena.

We were aware of the *curriculum alignment* literature (Levine, 1982; Niedermeyer, 1979; Neidermeyer & Yelon, 1981) focusing on aligning curriculum to objectives. However, we thought our magic bullet involved a finer tuning implied in task analysis. So, we called our construct *instructional alignment* and began our studies.

Instead of studying the obvious, which had already been established in the literature on instructional "congruence" (Baddeley, 1982; Tulving & Thompson, 1973), we focused on the *degree of effect* relative to instructional effort and such other issues as: (a) the critical features of stimulus conditions that maximize alignment effects; and (b) the alignment effect compared to aptitude effect. Traditional instruction generates .25 to .50 sigma effects. Is the alignment effect as large as it looks—approximately four times this norm?[1]

New Studies in Instructional Alignment

The Koczor Study. Koczor (1984) delivered six typical fourth-grade lessons, one per day, to 25 high achievers. Each 45-minute lesson had no instructional or cognitive relationship to the other; the purpose of the six lessons was to test the alignment effect with as many different fourth-grade skills as feasible within practical limits of a single study.

Immediately after each lesson, students received a posttest, the varying formats of which represented "degree of alignment." For example, one lesson used a paired associates technique that taught how to write Arabic numerals for designated Roman numerals. In the instruction, the Arabic was always presented or written *after* the Roman numerals. One group's posttest was aligned on this factor. In contrast, the misaligned treatment group received a test in which the Arabic numeral came first, and the student had to write the Roman numeral. Most teachers would consider this a *minor* variation of the instruction's stimulus conditions. That *minor* misalignment accounted for a 40% difference in posttest raw scores. Effect sizes representing differences between aligned and misaligned conditions for the lower and average aptitude students were as high as 1.10 and 2.74 sigma.

It is important to note that these "lower" aptitude fourth graders had a mean reading aptitude test score of 4.4 grade level. The so-called "higher" aptitude group had mean aptitude

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scores of grade level 8.6 (s = 1.3). Having come to expect large effects among lower achievers, such large effects observed in very high achievers surprised us.

The Tallarico Study. Tallarico (1984) used instructional alignment to investigate testwiseness effects. With norm referenced standardized tests (NRSTs) of reading achievement, testwiseness training tries to eliminate nonreading factors that control significant amounts of test score variance. To apply the alignment construct to testwiseness instruction requires teasing out critical features of those stimuli that most contribute to this extraneous variance, and then teaching all students to cope with them. If we reduce variance caused by these irrelevances, then we increase test validity; that is, students' scores are more nearly an estimate of true reading performance because extraneous sources of variance have been reduced.

To test the effects of two extraneous variance sources revealed in a task analysis of reading NRSTs (Cohen, 1977), Tallarico randomly divided second graders into three groups. One extraneous stimulus condition, *intent consideration*, required students to choose the best correct answer when two are reasonably correct (Schuller, 1979). The first group learned intent consideration. A second group learned to preread the item stem as a comprehension cue. Both groups learned these strategies under stimulus conditions and on pages simulating NRST conditions. A third group received a placebo, equal in time and in every other respect to the two experimental groups, except lacking testwise instruction.

A three-treatment-by-two-aptitude-level ANOVA indicated that almost 15% of the total sum of squares was explained by intent consideration and stem-cue skill, over and above the reading demand.

Now consider two facts: (a) Each treatment in the Tallarico study consisted of only two 30-minute lessons, a 10-minute demonstration followed by 20 minutes of seatwork drill; and (b) most educators are aware of the learning rate differences between high- and low-aptitude students. This treatment effect exceeded half that aptitude effect in the middle and lower middle class children used in this study.

For lower achievers, the stem-cue strategy group's average score exceeded the 85th percentile of the placebo group. The intent consideration treatment caused a 1.3 sigma effect.

The Fahey Study. Ability of instruction to overcome initial aptitude differences was one goal in a study of alignment effect relative to task difficulty. Using a 3 × 2 × 3 mixed ANOVA, Fahey (1986) analyzed interactions among the effects of directed practice under three different stimulus conditions for *understanding main idea*; two levels of aptitude and three levels of alignment (test item formats: aligned with instruction, misaligned #1, and misaligned #2). The first two factors were between-group analyses; alignment effect was a repeated measures.

Community college students were stratified by aptitude and then randomly assigned to one of the three directed practice levels. The research question was not would there be a difference among three types of directed practice, but *how much* of a difference relative to alignment.

Three important findings emerged. First, alignment effect was not observed between one pair of treatment levels which were the "easy" tasks (selecting main idea statements and titles from multiple choices). These lower level demands were easily within the students' learned repertoires. But when the task difficulty increased (producing in writing one's own statement of that main idea), so did the alignment effect.

Second, as anticipated, lower aptitude students did not perform as well as higher aptitude students when test items misaligned with the type of directed practice. As we found in the Koczor and Tallarico studies, alignment is more important to lower than to higher aptitude students.

A third finding was most significant to us. On the more difficult task, alignment was so effective that lower aptitude students performed better under aligned conditions than did higher aptitude students under misaligned. It is important to note that what we structured as "misaligned" is what one normally sees in the average classroom. The observed effect size was 1.2 sigma. With only 1.5 hours of instruction, alignment made enough of a difference to eliminate the expected aptitude gap.

Fahey demonstrated that lower aptitude students can successfully perform higher cognitive tasks when we align instruction. What usually passes for normal instruction in which the stimulus conditions of teaching and testing are slightly misaligned but certainly involve the "same skill" (as it is popularly perceived) can have a deleterious effect on lower achieving students. For low achievers, a little alignment goes a long way.

The Elia Study. The degree of alignment effect was dramatically demonstrated in a fourth study of 45 low socioeconomic level, urban, low achieving fourth graders. Elia (1986) taught meanings of 24 low frequency target words under three contrasting stimulus conditions: phrases, sentences, and paragraphs. In this repeated measures design, each subject learned eight words plus four word variants (e.g., *exist, existing*) under each contrasting condition, one condition per day over three days, in a counterbalanced treatment delivery. The day after each instructional segment, one third of the students was tested with words and variants systematically varied over the three stimulus conditions. Thus, one third of the items generated an aligned condition score, and each remaining third generated scores for misaligned stimulus conditions. In addition, some words aligned with instruction, and some were variants, representing another dimension of misalignment.

A 3×3×2 mixed ANOVA tested individual and interactive effects of two types of alignment. The first three-level factor represented the three contexts or conditions under which the student was taught, words in phrases, or sentences, or paragraphs. The second three-level factor represented the test item formats, words tested in phrases, sentences, and paragraphs. The third two-level factor represented either the word taught or its variant. Thus, some kind of transfer could be demanded via the condition, or the use of a variant, or both.

Overall, Elia reported an alignment effect of .91 sigma. In the phrase condition, alignment effect reached 1.76 sigma. Alignment/misalignment accounted for 16% of the total variance, and under the phrase condition, alignment explained 23% of the total variance.

Discussion and Conclusions

So far, our work with instructional alignment has led to three conclusions:

1. Instructional alignment routinely causes the 4-to-1 Effect, effect sizes ex-

ceeding one and often two sigma, about four times what we ordinarily see in typical classrooms. We routinely observe these large effects from small amounts of instructional effort.

2. *What* to teach is a more difficult question to answer than *how* to teach, considering the fine-tuning demands of task analysis.

3. Lack of excellence in American schools is not caused by ineffective teaching, but mostly by misaligning what teachers teach, what they intend to teach, and what they assess as having been taught. We have extended these conclusions to the bold statement that, in general, most teachers are effective, but usually at the wrong things.

What may these conclusions mean for practitioners? The idea that formal instruction should test what it teaches or teach what it tests is axiomatic. In general it is not being done for four reasons.

First, the level of fine tuning required for instructional alignment is beyond the current repertoire of most teachers, not because they cannot learn the skill, but because it is neither demanded of them nor taught in teacher training.

Second, teaching and assessing have been institutionally dichotomized. Instead of being an integral part of instruction, assessment is separated institutionally as well as in practice. For example, school districts and state education departments maintain separate departments for each domain. As a result, the content of commercially published NRSTs or locally mandated criterion tests usually differ in stimulus conditions from what teachers teach in the classroom. Current tests hide behind a "pseudo alignment" facade by claiming to measure the same "skills" as those taught in the classroom. But an enormous difference exists between what most educators call a skill or an outcome, and the kind of precision implied in the performance of instructional alignment.

Third, the expectation that instruction causes a normal distribution of ability is apparently rooted in a belief in the inevitability of cognitive inequality of human beings. This belief is so all-pervading and insidious, that most teachers and administrators I talk with honestly believe that to teach what we test and test what we teach is unethical because it denies a law of nature! Apparently, to make everyone masters of calculus or appreciators of literature would be a great lie.

Fourth, educators try to avoid responsiblity for what they teach. It is safe to be for teaching "literary appreciation," or "higher cognitive skills," or "aesthetic appreciation of art." However, it is dangerous to define these outcomes by behavioral indicators or with formal assessments making them amenable to instructional alignment. In fact, the popular view is that these fuzzies are beyond precise definition—a convenient strategy to avoid admitting to ourselves what we really mean by such lofty sounding instructional outcomes. Perhaps if practitioners realized the potency of ordinary teachers as manifest in the large effect sizes resulting from aligned instruction, they might dare to be accountable for these outcomes.

Teaching what we assess, or assessing what we teach seems embarrassingly obvious. The fundamental issue is: *What's worth teaching?* This is the same question as: *What's worth assessing?* We can either know what we're doing, or not know what we're doing, but in either case, we'll be doing something to other people's children. Do we not have an ethical obligation to know what we're up to?

The implications for researchers are equally important. Before stumping the country to promote constructs dear to our research hearts, we should consider the effect size we can expect our constructs to cause when put in practice. Presently, we find no other construct that consistently generates such large effects, which is probably why the idea of instructional alignment is so well-entrenched in the conventional wisdom of instructional designers, even if not in the programs currently found in most classrooms.

Are we saying that our alignment research is more important than what other researchers are into?

Certainly not. The purpose of scientific research is to explain phenomena. A small statistically significant effect helps us understand phenomena. Such effects support theoretical models. What we suggest is caution in disseminating information about these results to practitioners who do not appreciate the difference between *significant* effect sizes and statistically *significant* findings. As a result of this lack of appreciation, the obvious conventional wisdom of alignment gets drowned out by the cacophony of information about brain research, learning styles, and so forth, all of which are important to our sciences, but none of which may generate large effect sizes as efficiently as instructional alignment.

Notes

[1] We invented the construct "4-to-1 Effect" to represent this concept (see Cohen, 1984a, 1984b).

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MODULE
K-4

Provide Instructional Materials for CBE

Module K-4 of Category K—Implementing Competency-Based Education (CBE)
PROFESSIONAL TEACHER EDUCATION MODULE SERIES

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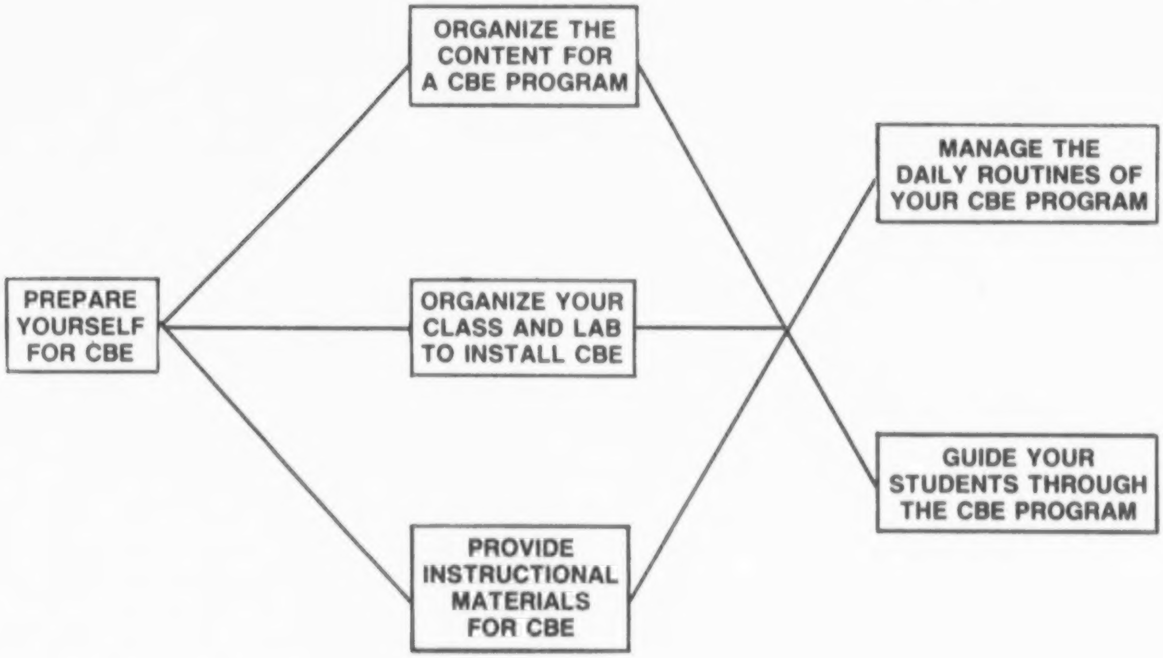
ORGANIZE THE CONTENT FOR A CBE PROGRAM
MANAGE THE DAILY ROUTINES OF YOUR CBE PROGRAM
PREPARE YOURSELF FOR CBE
ORGANIZE YOUR CLASS AND LAB TO INSTALL CBE
GUIDE YOUR STUDENTS THROUGH THE CBE PROGRAM
PROVIDE INSTRUCTIONAL MATERIALS FOR CBE

CBE IMPLEMENTATION PROCESS

INTRODUCTION

An effective competency-based program involves more than having a list of verified competencies and a strong instructional management system. You need to devise a system to provide instruction to students covering those competencies. And this instructional system must be consistent with the essential elements and facilitating characteristics of competency-based education (CBE).

How do you as a vocational-technical instructor locate or develop the instructional materials needed to support such a program? This module is designed to give you skill in locating and evaluating existing materials, in developing materials of your own, and in organizing your materials into a simple instructional delivery system, easily usable by students.

With the right materials, the right variety of materials, and a system for guiding students in their use, you will find that you are well on your way to having a competency-based program that is both effective and manageable.

To see how this module relates to the other modules in Category K, refer to the diagram on p. 2.

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ABOUT THIS MODULE

Objectives

Terminal Objective: In an actual teaching situation, provide instructional materials for CBE. Your performance will be assessed by your resource person, using the Teacher Performance Assessment Form, pp. 55–57 (*Learning Experience IV*).

Enabling Objectives:

1. After completing the required reading, evaluate a CBE learning package covering a competency in your occupational area (*Learning Experience I*).
2. After completing the required reading, critique the adequacy of a given learning guide (*Learning Experience II*).
3. Given a list of simple competencies, develop a complete learning guide covering a competency that you select from the list (*Learning Experience III*).

Prerequisites

The modules in Category K are **not** designed for the prospective teacher with no prior training and/or experience. They assume that you have achieved a minimal level of **content knowledge** in your occupational specialty and **skill** in the core teacher competencies of instructional planning, execution, and evaluation. They then build on or expand that knowledge and skill level, specifically in terms of implementing competency-based education.

In addition, to complete this module, you should have knowledge of the essential elements and facilitating characteristics of CBE. If you do not already meet this requirement, meet with your resource person to determine what method you will use to do so. One option is to complete the information and practice activities in the following module:

- *Prepare Yourself for CBE*, Module K-1

Resources

A list of the outside resources that supplement those contained within the module follows. Check with your resource person (1) to determine the availability and the location of these resources, (2) to locate additional references in your occupational specialty, and (3) to get assistance in setting up activities with peers or observations of skilled teachers, if necessary. Your resource person may also be contacted if you have any difficulty with directions or in assessing your progress at any time.

Learning Experience I

Required

Existing sources of materials through which you can locate and obtain a CBE learning package covering a competency in your occupational area.

A resource person to evaluate your competency in evaluating a CBE learning package.

Learning Experience II

Optional

Reference: Fardig, Glen E. *How to Write Student Learning Guides: A Handbook.* Orlando, FL: Orange County Public Schools, 1982.

Reference: Andreyka, Robert E., and Beverly, Lisa. *Manual for Writing Student Learning Guides: The Ridge Format.* Winter Haven, FL: Ridge Vocational-Technical Center, 1981.

Reference: Pucel, David J. "Instructor-Developed CBVE Materials." *School Shop.* 39 (April 1980): 38–41.

Reference: Sabin, William A. *The Gregg Reference Manual.* New York, NY: McGraw-Hill Book Company, Gregg Division, most recent edition.

Learning Experience III

Required

A resource person to evaluate your competency in developing a complete learning guide.

Learning Experience IV

Required

An actual teaching situation in which you can provide instructional materials for CBE.

A resource person to assess your competency in providing instructional materials for CBE.

General Information

For information about the general organization of each performance-based teacher education (PBTE) module, general procedures for its use, and terminology that is common to all the modules, see About Using the National Center's PBTE Modules on the inside back cover. For more in-depth information on how to use the modules in teacher/trainer education programs, you may wish to refer to three related documents:

The *Student Guide to Using Performance-Based Teacher Education Materials* is designed to help orient preservice and inservice teachers and occupational trainers to PBTE in general and to the PBTE materials.

The *Resource Person Guide to Using Performance-Based Teacher Education Materials* can help prospective resource persons to guide and assist preservice and inservice teachers and occupational trainers in the development of professional teaching competencies through use of the PBTE modules. It also includes lists of all the module competencies, as well as a listing of the supplementary resources and the addresses where they can be obtained.

The *Guide to the Implementation of Performance-Based Teacher Education* is designed to help those who will administer the PBTE program. It contains answers to implementation questions, possible solutions to problems, and alternative courses of action.

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Learning Experience I

OVERVIEW

Enabling Objective

After completing the required reading, evaluate a CBE learning package covering a competency in your occupational area.

Activity 1

You will be reading the information sheet, Selecting and Organizing CBE Instructional Materials, pp. 6–15.

Activity 2

You will be locating and obtaining a CBE learning package covering a competency in your occupational area and evaluating it against a given set of evaluation criteria.

Feedback 3

Your competency in evaluating a CBE learning package will be evaluated by your resource person, using the Learning Package Evaluation Checklist, p. 17.

Activity 1

The instructional materials required to support a competency-based instructional program are many and varied. For information on the characteristics of competency-based materials and on the procedures for locating, evaluating, and organizing existing materials, read the following information sheet.

SELECTING AND ORGANIZING CBE INSTRUCTIONAL MATERIALS

Well-developed, specifically targeted, and carefully tested instructional materials are crucial to the success of a competency-based instructional program. The five essential elements of competency-based education (CBE) all have implications for the kinds of instructional materials needed. In addition, several of the facilitating characteristics of CBE—relating to individualized instruction, self-pacing, frequent feedback, and field-based instruction—require that materials with unique qualities must be provided to students.[1]

What this means is that you will find it difficult, if not impossible, to establish a fully operational CBE program using a single textbook and your own presentations as the primary modes of instruction. Such an approach does not lend itself to the implementation of individualized, self-paced instruction. The instructional materials must allow students to learn and move along independently, without constant direction, correction, and instruction from you, the busy instructor.

Furthermore, it is highly unlikely that any one existing text will be geared exactly to the competencies you have identified for your program—competencies that reflect actual local occupational requirements. There is likely to be far too much extraneous matter, and the terminology used may not match that of your program competencies.

The standard texts and other training materials with which you are familiar will undoubtedly have much that you can use (e.g., descriptions of technical procedures, related information, theory, illustrations). However, effective CBE instructional materials require additional components—student learning activities and performance tests, for example. Thus, to support your CBE program, it is likely that some instructional materials will have to be developed, selected, or adapted.

In addition, a learning management system will have to be provided for routing students through those materials. If you are to serve effectively as a resource person—being free to advise, instruct, facilitate, and evaluate—this system must allow students to take personal responsibility for progressing from activity to activity—in other words, responsibility for their own learning. For that to occur, some sort of "road map for learning" is required.

Sound like a lot of work? Initially, it may be. But the responsibility is probably not yours alone. Administrators or support personnel may have responsibility for locating and reviewing materials—at least as a first step. The decision to develop materials or to use existing materials may have already been made by the administration when the CBE program model was established. Any decisions you make would then be based on this model.

And, once the instructional system is in place and operational, the development work is basically complete (except for periodic review and update). If you have the right materials for your competencies and your students, and if you have devised a simple, clear way of guiding students in the use of those materials, then you will be free to give students the assistance they need as they move through the program.

Student Learning Materials

These "road maps to learning" are, in CBE, referred to as learning packages, and there are two basic kinds: learning guides and modules. Both include a competency statement and/or performance objective, learning activity directions, an explanation of how performance will be evaluated, and a description of the criteria against which performance will be measured.

There are, however, differences between the two types of learning packages. A learning guide is relatively concise (1–10 pages) and typically refers the student to other sources for information (e.g., texts, workbooks, audiovisuals, instruction sheets, self-checks, answer keys, checklists)—sources not provided within the learning guide itself (see sample 1). It **guides** the student's use of a variety of other materials.

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[1] For a review of the essential elements and facilitating characteristics of CBE, you may wish to refer to Module K-1, *Prepare Yourself for CBE*.

SAMPLE 1

ONE FORM OF LEARNING GUIDE

Student Competency Sheet

Unit:	04 D.C. Theory
Competency Statement:	09 Measure the voltage, current, and total resistance in a series circuit
Performance Objective:	01 Given access to meters and given any series wired circuit board, measure and record the circuit voltage, current, and total resistance within the time allocated by the instructor. Your readings must be within ± 2% of the actual value, as predetermined by the instructor. Your care and use of meters must be in accordance with the meter checklist. You may not use references.

Learning Activities:

1. Read the entire Student Competency Sheet. If you can perform the Performance Objective, ask the instructor for the Criterion Evaluation for this unit. If not, proceed to Learning Activity 2.
2. Read Chapter 3, pp. 43–45, of *Electricity and Electronics*, and complete the following:
   a. Explain what a series circuit is.
   b. How would you explain current in a series circuit?
   c. What happens if you increase resistance while maintaining a constant voltage?
   Discuss your answers with the instructor.
   d. Complete Topic 9 in *Fundamentals of Electricity and Electronics*. Have your instructor check your progress.
3. If you have difficulty in completing the above activity or if so directed by the instructor, read Unit 4 of *D.C. Circuits: An Individualized Approach to Electronics*, and complete the following:
   a. Answer all the questions included in the reading assignment.
   b. Obtain a voltmeter and a circuit board, and practice measuring the voltage in several circuits. Have the instructor check your progress.
4. Obtain a series wired circuit board and the necessary voltmeter, ammeter, and ohmmeter, and practice using the meters to measure values of current, voltage, and resistance until you become proficient in their use. Have the instructor evaluate your performance.

Supplemental Reading:

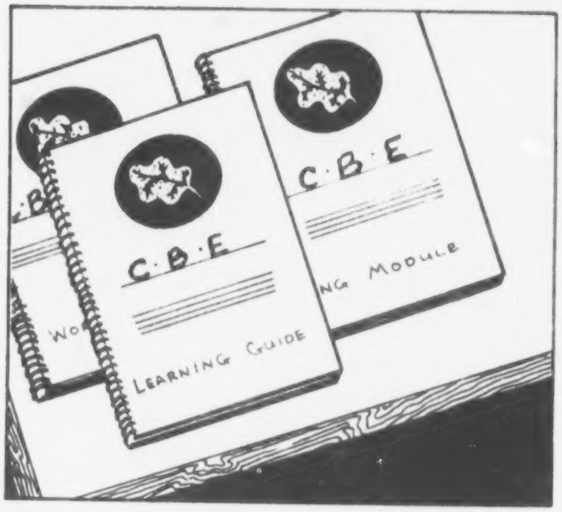
1. Chapter 11 of *Basic Electricity: Theory and Practice*
2. Chapter 4 of *Fundamentals of Electricity*
3. Pp. 1–14 of *Basic Electricity*, Volume 2

Criterion Evaluation:

Given access to the necessary meters, measure and record the requested values of voltage, current, and resistance of the series circuit furnished by the instructor. You must complete the exercise in ten minutes and all answers must be within ± 2% of their actual value. In obtaining measurements, the use and care of meters must be in accordance with the meter checklist. You may not use references.

Required Measurements:
1. Applied voltage
2. Total current
3. Total resistance
4. Voltage drop R1
5. Voltage drop R2
6. Voltage drop R3

SOURCE Adapted from Ralph Horne, "Guide for Implementing Competency-Based Education in Vocational Programs," Field Review Draft (Blacksburg, VA: Virginia Polytechnic Institute and State University, Division of Vocational and Technical Education, 1981), p. 62.



A module, on the other hand, is typically self-contained, with 10–30 pages or more. All the materials and directions that a student needs in order to achieve the competency and to demonstrate this achievement through evaluation of performance are contained within the module. The document you are now reading is a module.

This is, however, an oversimplification. Granted, the module is self-contained in the sense that instruction sheets or information sheets, which cover the cognitive material needed to achieve the competency, are usually provided within its covers. Nonetheless, if the different learning styles of students are to be met, then options for different learning paths to competence must be provided. Thus, the module, too, must refer to outside sources (e.g., media, field trips, alternate or supplementary readings).

Provision of a variety of learning paths is also important for students who are "recycling" because they did not achieve competence. Rather than rereading the same information sheet that failed to teach them the first time, they need another resource to tap.

It is probably best not to become too concerned about the differences between learning packages, but to focus on their similarities instead. Both provide students with the guidance they need to work through the instructional program.

Systems for Organizing Materials

Let's look at **some** alternative systems for providing materials and a structure for their use. One must start with two basic assumptions: (1) the competencies for your program have been identified and verified, and (2) each student has a list that indicates the competencies he/she is to achieve in order to reach occupational competence (or one level of occupational competence). What happens next? How does the student know what to do to achieve each competency?

One option is to have a specially developed self-contained module for each competency (or cluster of competencies). The student works through a module for each competency (learning, practicing, performing, and being evaluated). When competence is achieved, he/she moves on to the next module.

The self-contained module can be packaged in a variety of ways: stapled, bound in a plastic binder, placed in a loose-leaf notebook, and so on. Note that the more permanent bindings have the advantage of preventing the loss of individual pages. A disadvantage, however, is that it is more difficult to revise the module. The reverse is true with loose-leaf binders. Pages can be lost or misplaced or misordered. On the other hand, by simply slipping in an additional or substitute page, the module can be updated or revised.

Another option is to identify—for each competency—existing materials that are not necessarily competency-based. All resources for a given competency could be placed (1) in a file folder in a filing cabinet, (2) in a resource box on a shelf in the resource center, or (3) in the resource center, according to the existing cataloging system. This approach tells students where to go, but not what to do. What students are to do must be structured by teacher-prepared learning guides.

These learning guides can be placed in the front of each competency file or resource box. Or each student could have a notebook containing not only his/her learning contract or competency list, but also a learning guide for each competency to be achieved. Or there could be a master file of all learning guides—in a single file drawer, rack, or teacher-controlled notebook—that students could refer to or draw from.

Locating Existing Materials

In this information sheet, let us focus on what materials are available to you as you organize the instruction for your CBE program. What sources can you tap to locate the following types of materials:

- CBE modules, which you can use "as is" or adapt for use in your CBE program
- CBE learning guides, which you can use "as is" or adapt for use in your CBE program
- Other materials, which are not fully developed learning packages, but which provide elements that you could use in developing your own learning packages

Since CBE is coming into its own, there are many sources available. Sample 2 presents an extensive, though not exhaustive, list of the places you can contact to obtain materials you can use in your CBE program.

Evaluating Existing Materials

As you are no doubt aware, instructional materials—whether produced by commercial publishers or educational agencies—can vary greatly in quality. They cannot be taken at face value. In particular, not all materials that claim to be competency-based really are. And not all CBE materials are of good quality.

Therefore, any material you consider using should first be evaluated using the criteria against which you would measure any instructional material, CBE or otherwise. In other words, criteria such as the following should be used:

- Is the content on target? Does it deal specifically with the skills my students need to achieve?
- Is the content concise, including only key content and not extraneous material that will only confuse the students?
- Is the content accurate and up-to-date? Totally? In part?
- Is the material appropriate for my students (e.g., age, reading ability, occupational development)?
- Can my students understand the vocabulary used?
- Will this material motivate my students?
- Is this material geared to the abilities, needs, and interests of all my students? Some of my students?
- Do I have access to the equipment (e.g., projector, slide/tape equipment) necessary to use this material?
- Do I have the facilities (e.g., lab space, equipment, supplies) necessary to use this material effectively?
- Do I have access to the funds necessary to purchase this material?
- Is the material well produced technically? (For example, is the film's sound clear and audible? Is the print in the text easy to read?)
- Has the material been tested? (Does the author or producer have evidence that it will do what it is intended to do?)

There are some additional criteria that need to be considered if the material you are evaluating is a CBE learning package that you intend to use basically "as is" with students. Although the specific criteria may vary depending on the way you or your institution (or district or state) define the fundamental characteristics of a learning package, the evaluation checklist should be similar to the one shown in sample 3.

Bear in mind that there are some materials that you may select, not for use with students, but for use in guiding you in developing your own materials—instructional resources for you, the teacher, rather than for students.

By taking the time to review the materials already available to you—and by carefully considering each in light of some specific quality criteria—you can save yourself a good deal of unnecessary effort. There may be materials you can use just as they are. Ideally, you could find a set of CBE learning packages that fit your students and your competencies precisely—but don't count on it.

It is more likely that you will find **some** materials that, with **some** adaptation, can be made to fit local needs. At the very least, however, you should be able to locate a variety of excellent materials that can, through your development of learning packages, be drawn together into a total, well-organized CBE instructional system.

SAMPLE 2

SOURCES OF INSTRUCTIONAL MATERIALS FOR A CBE PROGRAM

National Sources

Open Entries
The Center for Studies in Vocational Education
Stone Building
Florida State University
2003 Apalachee Parkway
Tallahassee, FL 32301

Open Entries is the quarterly newsletter of the Communication Network for Competency-Based Vocational Education. Its purpose is to provide a nationwide system for the exchange of information about CBE materials, methods, conferences, workshops, and demonstration sites. By subscribing to this publication, you can learn what others are doing or send out a plea for help in a particular area.

Interstate Distributive Education Curriculum Consortium (IDECC)
The Ohio State University
1564 West First Avenue
Columbus, OH 43212

IDECC, a consortium of 28 states, was established in the early 1970s to develop a competency-based learning system for the improvement of instruction in **distributive education**. Using a research base of validated competencies for over 100 marketing-related occupations or occupational clusters, the consortium has developed—and is continuing to develop and update—a series of field-tested learning activity packages (LAPs). Member states have access not only to these LAPs, but also to a computer management matrix, which helps teachers to plan and manage the CBE program, and which keys competencies to LAPs.

Each LAP has a student version and teacher version. The student LAP includes a pretest, objectives, activity directions, alternate learning activities, needed materials (e.g., information sheets, exercise sheets), and a glossary. The teacher LAP provides scripts for group presentations, transparency masters, alternate group activities, a posttest, and answer keys.

Mid-America Vocational Curriculum Consortium (MAVCC)
1500 West Seventh Avenue
Stillwater, OK 74074

MAVCC has available numerous curricular materials, including 26 "units of instruction" in the areas of **trade and industrial education** (e.g., electronics, small engine repair, residential plumbing, health occupations, air conditioning, automotives), **home economics** (e.g., child care, foods, clothing), **agriculture/horticulture**, and **distributive education/marketing** (e.g., merchandising, manufacturing). Although designated as units of instruction and not as strictly competency-based, these materials contain some of the elements of a CBE learning package, including objectives, suggested activities, and criterion-referenced tests.

The National Center for Research in Vocational Education
National Center Publications
The Ohio State University
1960 Kenny Road
Columbus, OH 43210

Available from the National Center are 55 **metric education** packages, each targeted to a different occupational area. Each package includes performance objectives, learning activities, supporting information, suggested teaching techniques, objective-based evaluation items, and answer keys.

Competency-Based Individualized Vocational Education Consortium (CIVEC)
Curriculum Publications Clearinghouse
Western Illinois University
Horrabin Hall 47
Macomb, IL 61455

Student learning guides have been prepared by CIVEC to cover more than 18 occupational areas, including welding, dental assistant, data processing, machine trades, nurse's aide, horticulture, clerical-office, media specialist, clothing, farm management, drafting, coal mining technology, aviation mechanics, machinist, health occupations, auto mechanics, child care, and office occupations. Each learning guide contains a performance objective, a learning contract, steps in performance of tasks, resource lists, activity sheets, written criterion exam, performance checklist, and answer keys.

Vocational-Technical Education Consortium of States (V-TECS)
Curriculum Publications Clearinghouse
Western Illinois University
46 Horrabin Hall
Macomb, IL 61455

V-TECS produces resource materials for use in curriculum development, program planning, and program evaluation. Over 100 catalogs have been prepared for specific occupational titles and include the following: duty/task list, performance objectives, performance guides (steps for performing the task), equipment/tool lists, bibliography of resource literature, and validation information. Some V-TECS catalogs include criterion-referenced measures in addition to the other components. Instructors in member states may get the catalogs from their state departments of education. Others will need to order directly from V-TECS.

ERIC Clearinghouse on Adult, Career, and Vocational Education
The National Center for Research in Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, OH 43210

The 19 Educational Resources Information Center (ERIC) clearinghouses acquire, select, and process research, instructional, and related materials. These are announced in *Resources in Education* (RIE) and are available through the ERIC Document Reproduction Service. Indexes to and summaries of a variety of materials intended primarily for use by vocational educators are prepared by the ERIC Clearinghouse on Adult, Career, and Vocational Education. These are announced bimonthly in *Resources in Vocational Education* (RIVE). Relevant journal articles are annotated and announced in *Current Index to Journals in Education* (CIJE). Computer searches of the ERIC microfiche collection can be run for users on a cost-recovery basis.

National Network for Curriculum Coordination in Vocational and Technical Education (NNCCVTE)

The U.S. Department of Education supports NNCCVTE, which includes six regional curriculum coordination centers, to facilitate sharing of curriculum materials on a nationwide basis. These centers maintain libraries of curricular materials, including occupational analyses, and also have reference documents that might help locate occupational analyses available elsewhere. To acquire materials on a specific topic, contact the NNCCVTE state liaison representative through your state department of education.

East Central Network for Curriculum Coordination (ECNCC)
Attn: Task List Coordinator
Sangamon State University
E-22
Springfield, IL 62708

ECNCC, largest of the six regional curriculum coordination centers in NNCCVTE, is establishing a Task List Access System to promote the exchange of lists of identified tasks workers perform in a given occupation—the tasks students must master to be competent in that occupation. As of this writing, the access file contains about 500 task lists from the major program areas of agriculture, business, health care, home economics, and trade and industrial education. To obtain copies of lists already in the file, contact your NNCCVTE state liaison representative. To contribute to the file, write the task list coordinator at ECNCC.

Professional Associations

Professional associations serving teachers or workers in the various occupational service areas can also be contacted to see if they have supported or are supporting the development of any CBE or CBE-related materials. Examples of this type of development are as follows. The ED number listed refers to the index number in the ERIC system.

American Home Economics Association (AHEA)
Washington, DC

AHEA has supported the development of an *Occupational Home Economics Series*, comprising ten CBE modules. Each module has listings of competencies, student behavioral objectives, teaching strategies, and teaching resources; an assessment section (with pre- and posttests and a performance assessment instrument); an appendix that includes both learner and teacher information sheets (worksheets, fact sheets, activity sheets, answer sheets); and an introduction that describes how the materials were developed and tested, directions for teacher use, and a rationale and job description for the occupational area. The modules are available from the U.S. Government Printing Office, Washington, DC 20402. ED 155 384

Associated General Contractors
1957 East Street, N.W.
Washington, DC 20006

This organization has supported the development of instructional units for such areas as **bricklaying**, **cement masonry**, and **commercial carpentry**. Each unit includes student behavioral objectives, suggested activities, information sheets, transparency masters, job sheets, assignment sheets, answer sheets, paper-and-pencil and criterion-referenced performance tests, and test answers. ED 156 922; ED 156 920; ED 170 614

University Resources

The following are some examples of the types of materials that are being developed through university special projects or curriculum labs—materials that could be useful in a CBE program:

Allied Health Professions Project
University of California
1003 Wilshire Boulevard
Santa Monica, CA 90401

This project resulted in the production of a series of task analyses and modules to support individualized instruction in the **clinical laboratory occupations**. Each module includes directions for student use, performance objectives, a vocabulary list, a general introduction, a skill lesson (specific objective, materials and equipment listing, and step-by-step illustrated procedure), a performance checklist, enrichment activities, and reading assignments. ED 069 897

Vocational Curriculum Materials Center
Pittsburg State University
Pittsburg, KS 66762

As part of a Basic Core Curriculum Project, 29 units of instruction were prepared in the area of **horticulture**. Each unit includes a terminal objective, specific objectives, information sheets, assignment sheets, and a unit test. ED 185 368 - ED 185 370

Ohio Agricultural Education Curriculum Materials Service
Room 254, 2120 Fyffe Road
The Ohio State University
Columbus, OH 43210

This center has produced a number of student manuals, teacher supplements, slide series, cassettes, transparency masters, sample exams, forms, and task sheets for a wide range of **agriculture-related courses**. The materials are tied to the Agdex Filing System. Although not competency-based in nature, they could be used as resources within a CBE program or as teacher resources in producing learning packages.

Instructional Materials Laboratory
Trade and Industrial Education
The Ohio State University
112 Townshend Hall
1885 Neil Avenue Mall
Columbus, OH 43210

Like many curriculum labs and centers, this laboratory has developed and published a variety of occupational and task analyses. This particular lab has released analyses for over 100 **T&I occupational areas**. It has also produced many other instructional guides, manuals, etc.

South Carolina Vocational Education Media Center
Clemson University
10 Tillman Hall
Clemson, SC 29631

This center has produced 13 sets of learning activity packages (LAPs) based on the performance objectives in the V-TECS *Secretarial Catalog*. Designed for self-paced, individualized instruction, the 87 LAPs typically include a student manual, instructor's manual, filmstrips, and transparency masters. A student manual contains information, related activities, self-tests, and an answer key. An instructor's manual contains teaching instructions, a list of the equipment and materials needed, samples, and a filmstrip script.

In addition, the center has produced 14 **food service worker** modules (ED 176 044), 96 **tractor mechanics** LAPs (ED 171 933; ED 171 934; ED 181 265 - ED 181 267), 25 **greenhouse production** LAPs (ED 179 801), 15 **floriculture** LAPs (ED 181 264), and 84 **gardening and groundskeeping** LAPs (ED 181 268; ED 185 358). Each LAP contains the following: introduction; directions; objectives; learning activities; lists of tools, equipment, materials, and supplies needed; safety considerations; activity instructions; self-check; final checkout activity; and final checklist.

Occupational Curriculum Laboratory
East Texas State University
Commerce, TX 75428

This lab has produced teachers' guides and units of instruction for **health occupations education** (10 units), **office education** (46 units), **office duplication practices** (33 units), **general construction trades** (43 units), and **general mechanical repair** (19 units). Each unit contains performance objectives, outline of minimum student activities, information sheets, transparency masters, job sheets, student assignment sheets, objective tests, and answer sheets. These materials could be useful in developing CBE materials locally. ED 170 601 - ED 170 613

Division of Vocational-Technical Education
Virginia Polytechnic Institute and State University
Blacksburg, VA 24060

At VPI, a course for **receiving clerks** was developed, involving module topic outlines on nine topics and the development of prototype modules. Each outline included a concept statement, performance objectives, generalizations, occupational competencies, suggested learning activities, and criterion-referenced measures. ED 159 423

State Resources

Many state departments of education and state curriculum labs have also developed a number of related materials. Six specific examples follow; you should check with your own state as well.

Competency Based Vocational Education Unit
Division of Materials and Curriculum
1912 Capital Plaza Tower
Frankfort, KY 40601

Over 1,500 modules have been developed in Kentucky in 28 occupations, representing **all vocational service areas**. Each module is developed based on one performance objective and includes instruction sheets, self-checks, and final checkout activities. The modules are supplemented by slide/tapes and instructor manuals.

Curriculum Development Unit
New Mexico State Department of Education
Education Building
Santa Fe, NM 87503

This unit has developed ten mini-manuals on **office communication proofreading**. Each mini-manual includes terminal and specific objectives, information, tasks for practice, and a test. Answer keys are provided in teacher manuals. ED 146 320 - ED 146 328

The Center for Studies in Vocational Education
2003 Apalachee Parkway
Tallahassee, FL 32301

Supported by the Florida Division of Vocational Education, this center has produced competency-based instructional materials for a number of programs. Of particular note are learning packages for **farm management**.

Curriculum & Instructional Materials Center (CIMC)
Oklahoma State Department of Vocational
and Technical Education
1500 West Seventh Avenue
Stillwater, OK 74074

Part of NNCCVTE, this center also does a good deal of development work. Covering **all vocational service areas**, their materials are in the form of loose-leaf units of instruction. Each unit contains objectives, suggested activities, information sheets, transparency masters, assignment sheets, job sheets, criterion-referenced unit tests, and answer sheets. This center has also produced a large number of competency profiles.

Vocational Curriculum Laboratory
Cedar Lakes Conference Center
Ripley, WV 25271

A unit of the West Virginia Department of Education, Bureau of Vocational-Technical and Adult Education, this center has helped to support the development of a number of competency-based curricula for vocational education areas, including **prevocational business and office**, **home management**, and **nursing assistant**. Each curriculum package includes a teacher's section, an introduction, student competency sheets and learning activity directions, supplements, and evaluation sheets.

Wisconsin Vocational Studies Center
University of Wisconsin
Madison, WI 53706

This center has developed seven instructional modules (instructional units) on **solar energy systems**. Supported by a glossary and transparency masters, each module contains unit and specific objectives, reading material, an assignment sheet, activities, a unit test, and an answer key. ED 167 362

Locally Produced Resources

Some secondary and postsecondary schools have developed their own CBE materials. In contacting these schools, the only caution would be that, in some cases, supplies may be limited.

Competency-Based Vocational Education Demonstration Site
Ridge Vocational-Technical Center
7700 State Route 544 North
Winter Haven, FL 33880
(813) 422-6402

Minnesota Curriculum Services Center
3554 White Bear Avenue
White Bear Lake, MN 55110
(612) 770-3943

Media Center
State Fair Community College
1900 Clarendon Road
Sedalia, MO 65301
(816) 826-7100

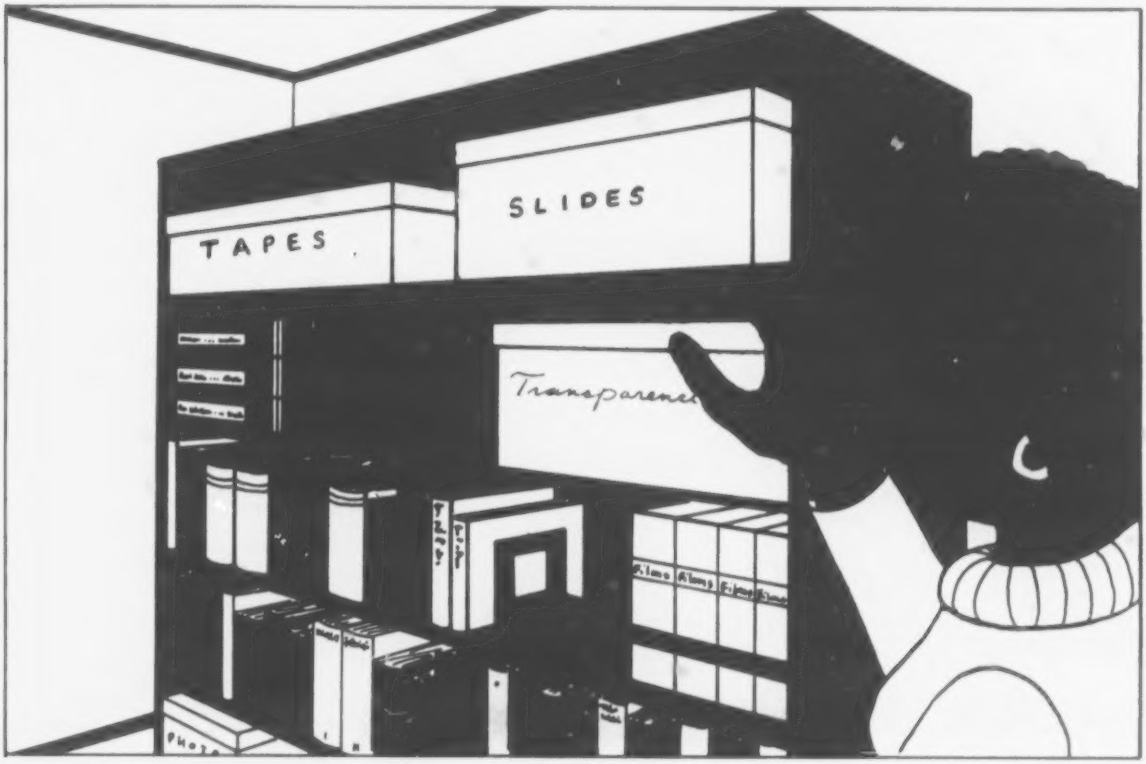
Competency-Based Vocational Education Project
Orange County Public Schools
434 North Tampa Avenue
Orlando, FL 32802
(305) 422-3200

PACE Project
Hocking Technical College
Nelsonville, OH 45764
(614) 753-3591

Skyline Career Development Center
Dallas Independent School District
Dallas, TX
Contact: Harper & Row, NY, NY

Fox Valley Technical Institute
Educational Resource Center
P.O. Box 2277
Appleton, WI 54913
(414) 735-5633

Clearinghouse
Holland College, Royalty Centre
Enman Crescent
West Royalty, Prince Edward Island
CANADA, C1A 7N9
(902) 892-9124 or (902) 892-2401



SAMPLE 3

CBE MATERIALS CHECKLIST

Directions: Rate the CBE instructional materials against each of the following criteria. Place an X in the NO, PARTIAL, or YES box beside each item to indicate how well the materials meet that criterion. If a criterion is not applicable to the materials in question, place an X in the N/A box.

Name ____________________

Title of Materials ____________________

Date. ____________________

RATING

	N/A	No	Partial	Yes
1. The learning package contains the following basic components:				
a. clear directions for using the learning package or a self-explanatory format	☐	☐	☐	☐
b. a rationale or introduction explaining the purpose and importance of the skill being covered	☐	☐	☐	☐
c. a competency statement and/or performance objective	☐	☐	☐	☐
d. clear, complete explanations of the activities to be completed in order to achieve each enabler and final competence	☐	☐	☐	☐
e. instruction sheets or reference to other resources references containing the needed information	☐	☐	☐	☐
f. devices for immediate feedback	☐	☐	☐	☐
g. a performance checklist designed to measure actual student performance of the competency	☐	☐	☐	☐
2. The learning package also contains the following components (depending on your criteria for learning package content and format):				
a. a listing of prerequisites	☐	☐	☐	☐
b. a listing of special terminology, and any resources and materials required	☐	☐	☐	☐
c. a preassessment device	☐	☐	☐	☐
3. The learning package either includes all necessary materials or clearly specifies what outside materials are needed	☐	☐	☐	☐
4. The learning package contains a variety of activities to suit a range of learning abilities and styles	☐	☐	☐	☐
5. Opportunities for recycling activities are included	☐	☐	☐	☐
6. The learning package provides opportunities for students to interact with peers, instructor, and others	☐	☐	☐	☐
7. Supplementary enrichment activities are provided to meet the needs of interested students	☐	☐	☐	☐

	N/A	No	Partial	Yes
8. Although the learning package could be enhanced by group activities, a student could complete it on an independent basis	☐	☐	☐	☐
9. The learning package activities are sequenced in a logical order	☐	☐	☐	☐
10. The reading level, technical level, and interest level are appropriate to the target student group	☐	☐	☐	☐
11. The learning package is well produced (e.g., good grammar, correct spelling, clear layout, clean copy)	☐	☐	☐	☐
12. The learning package is attractive	☐	☐	☐	☐

Activity 2

Using existing sources of materials, locate and obtain a CBE learning package (learning guide or module) covering a competency in your occupational area. (If circumstances make it difficult for you to acquire a learning package through outside sources, you may check with your resource person. He/she may have sample learning packages you can use.)

Review the learning package against a valid set of evaluation criteria—either those provided on pp. 14–15, or others suggested by your resource person.

On the basis of your evaluation results, **describe in writing** how you would rate the package. Overall rating? Specific strengths? Specific weaknesses? Would you use it? How? What, if anything, would you do to modify it?

Feedback 3

After you have prepared your written evaluation of the learning package you obtained, arrange to have your resource person review and evaluate your work. Give him/her the learning package, the evaluation criteria you used, and the Learning Package Evaluation Checklist, p. 17, to use in evaluating your work.

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LEARNING PACKAGE EVALUATION CHECKLIST

Directions: Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name

Date

Resource Person

	LEVEL OF PERFORMANCE			
	N/A	No	Partial	Full
1. In preparing his/her evaluation, the instructor considered all the essential criteria that a learning package should meet	☐	☐	☐	☐
2. The instructor's overall rating of the learning package was fair and accurate	☐	☐	☐	☐
3. The instructor identified all the key strengths of the package accurately	☐	☐	☐	☐
4. The instructor identified all the key weaknesses of the package accurately	☐	☐	☐	☐
5. The instructor's decisions concerning whether and how he/she would use the package were appropriate, given its quality and content	☐	☐	☐	☐
6. Proposed modifications to the package would, in fact, increase its appropriateness or usability	☐	☐	☐	☐

Level of Performance: All items must receive FULL or N/A responses. If any item receives a NO or PARTIAL response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

NOTES

Learning Experience II

OVERVIEW

Enabling Objective	After completing the required reading, critique the adequacy of a given learning guide.
Activity 1	You will be reading the information sheet, Developing or Adapting CBE Learning Packages, pp. 20–41.
Optional Activity 2	You may wish to read one or more of the following supplementary references: Fardig, *How to Write Student Learning Guides: A Handbook;* Andreyka and Beverly, *Manual for Writing Student Learning Guides: The Ridge Format;* and/or Pucel, "Instructor-Developed CBVE Materials," *School Shop.*
Optional Activity 3	You may wish to review the following style/grammar text: *The Gregg Reference Manual.*
Activity 4	You will be reviewing the student learning guide on cashing checks, pp. 43–46, and critiquing the adequacy of that learning guide's format and content.
Feedback 5	You will be evaluating your competency in critiquing the adequacy of a given learning guide by comparing your completed critique with the Model Critique, pp. 47–48.

Activity 1

If you are unable to locate high-quality CBE materials that fit your occupational area and the needs and abilities of your students, you may need to adapt existing materials or develop your own. For information about how to adapt or develop a CBE learning package, read the following information sheet.

DEVELOPING OR ADAPTING CBE LEARNING PACKAGES

Whether each of your learning packages is going to be in the form of separately filed components, a competency sheet or learning guide, or a self-contained module, certain basic questions must be answered, as follows:

- Where does the development process start?
- Who will be responsible for the development of the CBE learning packages?
- What format will be used?
- What components must the learning packages contain?
- What developmental procedures will be followed?

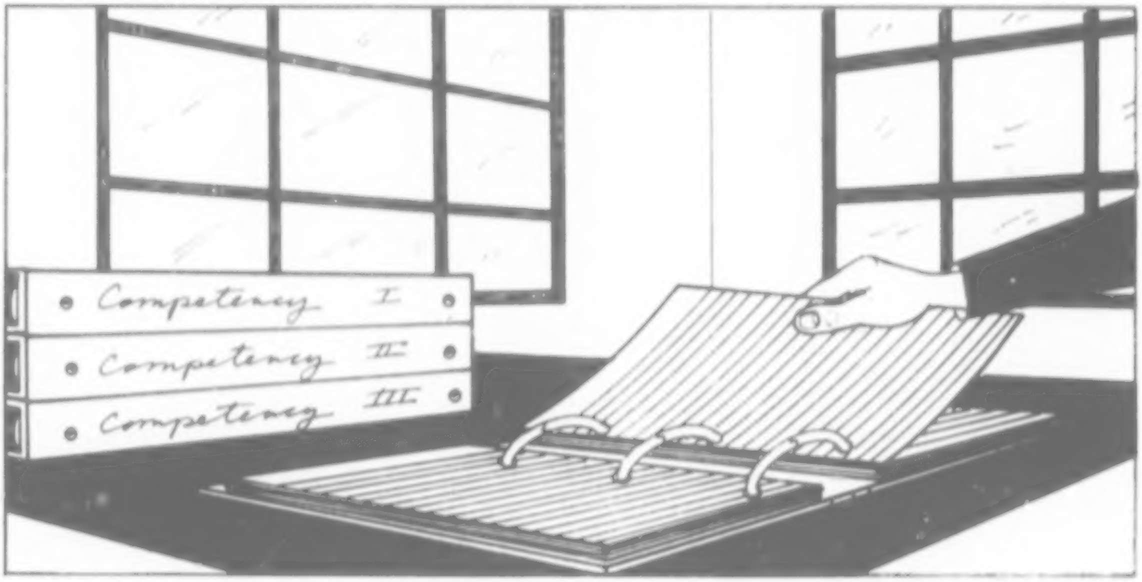
Let's discuss each of these questions in detail.

Where to Start?

The instructional materials development process starts **after** you have identified, verified, and (in some cases) clustered a set of competencies for your occupational area. Learning packages can then be developed to provide instruction covering all the competencies. Grouping the skills to form learning packages can be handled in various ways, depending on the complexity of the skills involved and the learning package format to be used.

For example, if the skills are substantial and difficult for students to achieve, then an individual learning package for each skill is recommended. If many of the skills are relatively simple and quickly achievable, related competencies can be clustered, and a single learning package could cover a cluster of skills. If you plan to produce learning packages in the form of loose-leaf notebooks containing individual competency sheets, each notebook might cover a cluster.

These are just a few examples of the types of considerations that affect the number of packages you will need to develop in order to cover the program competencies.



Who?

In many institutions, individual instructors are given total responsibility for the development, continual updating, and revision of the learning packages students will use. Given a list of the competencies to be achieved by students, they decide how each competency will be taught—what prerequisites are required, what instructional strategies will be employed, what criteria will be used to evaluate student performance. These decisions are used to organize the content of the learning packages.

In other institutions or school systems—particularly where more than one instructor will be using the finished materials—the development of learning packages is a team effort. A group of instructors in the same occupational area get together and work out the overall approach, the instructional pattern, and the level of the materials. Then each instructor is assigned a series of packages to complete, perhaps in an area of his/her special interest or expertise.

Even more efficient (if the institution can afford it) is the use of specially formed instructional materials development teams. Such a team may consist of a curriculum specialist, a media specialist, a typist, and one or more instructors in the target occupation. The team organizes for a concentrated materials development effort, which may take about four months for the typical program. When the task is completed and all learning packages have been written, the specialists move on to work on another program with another group of instructors.

No matter how it is done, it is a job that requires a big investment in time and effort. Materials development is best accomplished when blocks of time can be set aside for the purpose. Attempting to work a few minutes here and there as teaching conditions will allow is most inefficient.

Some institutions are able to provide released time for instructors to develop learning packages. Others schedule one day a week for curriculum development. Still others make materials development a summer job for teachers.

If you are to be involved in the development of learning packages—either alone or as part of a development team—it is important that you have adequate training, personal commitment, funds, and time to do the job needed to produce high-quality, usable, effective materials. Ideally, the administration will provide you with an opportunity to attend one or more workshops covering how to develop the **specific** type of learning packages to be used in your institution.

What Format?

It is by far best (in fact, almost a necessity) that **all** learning packages to be developed in an institution or district follow the same format. In terms of instructional management and materials production, this need for standardization of format cannot be overemphasized. It simplifies many aspects of materials development and use in a number of ways.

For example, a single workshop on the development of learning packages will meet the needs of all prospective developers. A curriculum developer working with staff will have a single format to deal with. Instructors teaching one program can teach another, knowing the materials' format and directions for use will be the same. Students taking several program offerings will not have to adjust to a new materials' format in each offering.

In short, the **format** becomes a framework—familiar to all who must use it—and the **content** receives the focus of attention.

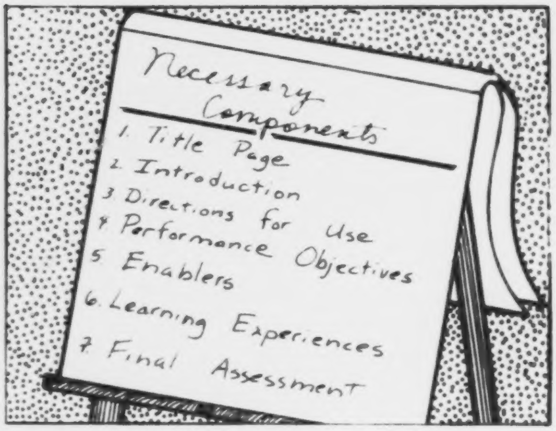
Furthermore, the more that you can incorporate "boilerplate" material into the development process, the easier—in general—the process becomes. By *boilerplate material,* we mean material that is standard for all packages and that can be duplicated for use over and over.

Pages providing general instructions in how to use the learning package are an example of boilerplate material. The pages provided as samples in the next section of this information sheet are another example. There is a standard format for each component to be included. All the instructor needs to do is select the right quantity of the right pages and type in the requisite information, as specified on the formatted pages.

This particular format is the work of Orange County Public Schools in Orlando, Florida. It is a modification of a format designed by 916 Area Vocational

Technical Institute in White Bear Lake, Minnesota, which is being used in over 130 schools nationwide. Formats of the kind shown here are proven to be successful; students find them easy to use—and they learn.

While there is no need to reinvent a good learning guide format, you may want to produce one that is specifically designed for your institution. You can design a special logo, modernize and make the type more attractive, or emphasize a particular feature. If your print shop has the capability, you could produce your learning guides in two colors or with a unique binding or cover.



What Components?

Although CBE learning packages come in a variety of shapes, sizes, formats, and levels of detail, there are certain components each should contain. Following are descriptions and samples of each of these components. Although the discussion applies, in most cases, to any type of learning package, we will focus on the development of **learning guides**, because this is the type of learning package most commonly used in secondary and postsecondary CBE programs.

Title Page

This section should give such identifying information as the program or course name, duty area, competency statement (learning guide title), and competency number(s).

In sample 4, you will note that part of this page includes title page information. The course title is *Child-Care Worker*. The duty/unit is *Performing Food Service Activities*. The competency is *Supervise mealtime activities*, and the competency number is *076.0*. As illustrated in this sample, the competency statement should be prominently displayed—easy to find and read—because that is what students will be interested in.

Notice in sample 4 that space is provided at the side of the page for coded information identifying the course and competency numbers. Some formats also provide space for coded information identifying such items as the vocational-technical department, required prerequisites, and revision dates.

Introduction

Sometimes called the *rationale* or *purpose*, the introduction should briefly explain to students what competency is to be achieved, why it is important, and how it relates to other skills they are acquiring.

An introduction should be kept relatively short (around 50–150 words). It should not attempt to cover everything the student needs to know about the skill. Save detailed instructions and information for the activities. Also, use the second person singular—*you*—to personalize what you are saying and to arouse the student's interest in the subject. The introduction is also an appropriate place to define a few key terms.

The introduction in sample 4 explains why supervising children's mealtime activities is important (sentence one), the purpose of such supervision (sentence two), and other tasks involved in effective supervision (sentence three). The term *you* is used to create the feeling that the discussion is addressed directly to the reader. Another example of an introduction can be found on p. 3 of the module you are now reading.

Directions for Use

Students need to be given clear directions for how to use learning guides. These directions for use are often of two types: those **general** to a given set or series of learning guides and those unique to the **specific** guide in question.

General directions may be handled in one of several ways. They may be included as boilerplate information in each learning package (as they are on the inside back cover of the module you are reading). More frequently, they are covered in a separate user's guide or are presented as part of a workshop or training session in which students learn to use the learning guides effectively.

SAMPLE 4

LEARNING GUIDE: COVER PAGE

STUDENT LEARNING GUIDE

SAND HILLS TECHNICAL INSTITUTE
West Ruff Road
Littleburg, Florida

ORANGE COUNTY PUBLIC SCHOOLS
Orlando, Florida 32802

COURSE NO. 5385

COMPETENCY NO. 076.0

COURSE TITLE: CHILD-CARE WORKER

DUTY/UNIT: PERFORMING FOOD SERVICE ACTIVITIES

COMPETENCY: SUPERVISE MEALTIME ACTIVITIES

INTRODUCTION:

Mealtime should be a time of enjoyment and learning for the children in your care. You will want to help these children (1) to develop independence in serving themselves, (2) to eat with good table manners, (3) to try new foods, and (4) to develop positive attitudes toward food and eating. You will also need to know how to serve food efficiently and attractively. This learning guide will help you acquire these important skills.

PERFORMANCE OBJECTIVE:

Given access to a group of children, serve three meals or snacks, and supervise the mealtime activities of the group. Your performance will be evaluated by your instructor, using the performance test checklist.

PERFORMANCE ENABLERS:

1. Demonstrate knowledge of the procedures involved in supervising children at mealtime.
2. Demonstrate knowledge of the procedures involved in serving meals to children.
3. In a day-care setting, practice working with other child-care workers and with children at mealtime.

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PLEASE DO NOT WRITE OR MARK ON THE LEARNING GUIDE

Any specific directions, however, are most often provided in the learning guide to which they apply. For example, any prerequisite skills should be specified. In addition, if students may opt—on the basis of prior competence—to skip the preliminary experiences and "test out" of a particular learning guide, this procedure should be explained (as shown in the first learning activity in sample 1, p. 7).

Performance Objectives

There are differences of opinion among instructional materials developers about the place of performance objectives in student learning guides. Some contend that a task or competency statement (e.g., *Weld 3-pass tee joints in flat position*) is all that is needed; after all, the final performance test and checklist describe the conditions of performance and provide the criteria for evaluation.

At the other extreme are those that feel that a complete student performance objective (or behavioral objective) is required—one that clearly states (1) the overall performance required (activity to be performed), usually a restatement of the competency; (2) the **specific** conditions under which it will be performed; and (3) the **specific** criteria to be met.

Such student performance objectives can be quite lengthy and involved. However, they may be quite useful in occupational programs that are in the transition stage of moving to CBE—programs that don't yet have complete student learning materials. In those situations, developing a student performance objective for each competency statement can be a definite step toward creating a systematic program emphasizing student performance.

In between these two extremes are those people that agree that the objective statement need not be self-contained—including all the minute conditions and all the criteria—as long as that information is provided somewhere within the learning guide. However, they feel that providing a performance objective in the front of the learning guide—as in sample 4, p. 23—better informs the student about what must be accomplished in order to demonstrate proficiency in that competency.

As illustrated in sample 4, this latter type of performance objective includes a statement of the competency to be achieved and of the **key** conditions under which the competency is to be performed. It then refers the student to the device in the learning guide where the performance criteria can be found (e.g., in the performance checklist).

For example, if the competency were *Measure blood pressure*, the performance objective might read as follows:

> Given a 'patient' and the necessary equipment, measure the patient's blood pressure using standard medical procedures. Your performance will be assessed by your instructor using the final performance checklist contained in your learning guide.

These performance objectives are sometimes called *terminal objectives* (in this module, for example) because they specify the **final** outcome to be achieved. More sensitive souls prefer not to use the term *terminal*, however, because of its other meaning; they would prefer not in any way to suggest that completion of a learning guide could be fatal.

If you do decide to use objectives, each learning guide should spell out, in performance terms, the competency to be achieved in that guide. If the basis of the program is, for example, a V-TECS listing of objectives for the occupation, the performance objectives for the learning guides are usually taken directly from the V-TECS catalog, without change.

If some other competency identification procedure is used (e.g., the DACUM process), the performance objectives can generally be derived simply by translating the statements on the task or competency list into objective-type statements. In other words, for each task statement on the list, you would need to add information about the conditions under which the task must be performed and the criteria to be met.

However, this translation process may not always be as straightforward as it seems. Another potential source of confusion for the developers of learning guides concerns the meaning of the terms *occupational task statement* and *performance objective*. A task statement describes what an **incumbent worker** in the occupation does on the job. A performance objective describes what a **student** is supposed to be able to do in order to meet the requirements of the vocational-technical training program. One is occupational, the other instructional.

The two should be very close, but they may not always be identical. For example, a nursing skill might be to apply resuscitation techniques to an unconscious infant. However, because that isn't feasible in a training program, the performance objective may call for demonstrating the techniques on a mannequin. Similarly, for a task that is typically done in the field, the performance objective may require that the student demonstrate it in the laboratory.

Enablers

Enablers (also called *performance enablers, enabling objectives*, or *elaborations*) are designed to enable, or help, students to achieve a particular occupational skill. The enablers grow out of the process of task analysis—a process in which each competency (or task) is analyzed to determine what steps and procedures are involved in performing the competency, what background knowledge needs to be acquired, and what attitudes are involved.

Sample 5 shows a form that can be used for breaking down a competency into these component parts. Enablers can then be developed that (1) cover those elements, (2) give students the chance to **practice** the competency, and (3) lead students in a **logical sequence** to achievement of the final performance objective.

If there is a body of **knowledge** that the student must know in order to perform properly, the enablers might read as follows:

- Define the 20 terms related to respiratory disease.
- Name the major parts of a machine lathe.

There will also be enablers that provide **practice** of the skill; for example:

- Perform resuscitation procedures on a laboratory mannequin.
- Remove and replace various washing machine motors.

Additional examples of knowledge and practice enablers were shown in sample 4, p. 23.

You may also uncover necessary **related skills** (e.g., in math and communications) embedded in the task. Such enablers might be as follows:

- Calculate the mean and standard deviation of marketing data.
- Write simple directions for product assembly.

Remember, the enablers are designed to help students achieve the final performance objective. They are not ends in themselves. If a student can perform a competency successfully without going through the enablers, fine (though this is rarely the case). If you discover through student use that the enablers don't really help students achieve the competency, the enablers must be changed or deleted.

Learning Experiences

For each enabler, there should be a learning experience that is keyed directly to the achievement of that enabler. Some learning experiences should provide students with the necessary background information. Some should provide students with an opportunity to practice the skill in as **realistic** (close to actual job conditions and requirements) as possible. Some learning experiences may include a combination of information and practice.

Regardless of how the learning experiences are structured, however, achievement of the enablers should lead, in turn, to the attainment of the final performance objective.

Within each learning experience, you will need to provide (1) learning activities, (2) evaluation activities, and (3) feedback devices. Let's look at these three elements a little more closely.

Learning activities. A learning activity is, as its name suggests, an activity designed to promote student learning. Thus, such activities provide the student with needed information and opportunities to apply that information or to practice the competency to be achieved. In designing learning experiences, it is critical that a **variety** of learning activities be provided. You need to guard against the temptation to limit yourself to just a few types of learning activities—ones with which you are familiar, ones that you particularly like.

The following are examples of some learning activities that are particularly suitable for use in individualized learning guides and usable in some form for both secondary and postsecondary students:

- Reading short, relevant textbook sections dealing specifically with the competency
- Reviewing standard reference manuals or shop manuals in the vocational-technical field
- Reading special articles available in the school library
- Solving practice computational problems and exercises
- Viewing or listening to audio or audiovisual materials
- Operating working models or mock-ups
- Role-playing a performance in a simulated situation
- Observing a skilled worker in a real work situation
- Videotaping performance for self-evaluation purposes
- Observing a teacher-led minidemonstration of a special procedure
- Constructing projects or producing services
- Participating in skills practice or drill to perfect a specific technique
- Memorizing specific and much-used information, formulas, or terminology
- Performing specific experiments in the laboratory, and reporting results

SAMPLE 5

TASK ANALYSIS FORM

General Secretary

Competency: Produce Business Letters

In performing this competency, the secretary will need to do the following:

Conduct These Activities	Know the Following	Exhibit These Attitudes
1. Select appropriate materials	Types of stationery Type styles Number and type of copies needed	
2. Use correct letter format	Business letter parts Business letter styles	
3. Check for correct punctuation and spelling	Punctuation and spelling rules	
4. Edit letter as needed	Editing procedures Grammar	Caring attitude
5. Type letter	Accurate and efficient operation of typewriters	Exhibit concern for quality of finished product
6. Make appropriate corrections	Correction materials Correction procedures	Appreciation for accuracy and neatness
7. Proof completed letter	Proofreading skills	Appreciation for accuracy and neatness

- Writing technical reports, reactions to case studies, reports for group discussion
- Preparing schematic drawings, charts, graphs, plans, layouts, styling illustrations, and other visual materials
- Critiquing or evaluating an example of a finished product or the performance of a skill

A variety of up-to-date materials should also be included insofar as possible. Do not include only readings (references to texts and instruction sheets). In developing a learning guide for any given skill, make a real effort to identify other types of media that provide or supplement the content—particularly media that can be used by students working individually.

Identify sources of free and commercial media and send for catalogs. Consider slide/tapes, filmstrip/tapes (or just slides and filmstrips), film loops, and so on. Nor should you fail to consider the kinds of media that can be locally produced, such as videotapes, picture books, and slide series. Models, real objects, potential resource persons, and on and on—all modes should be considered so that you can meet the various learning abilities and styles of your students.

In sample 6—another page from the child-care learning guide—the learning activities (learning steps) and related resources required to meet the second performance enabler are explained. Notice the variety of activities: reading outside resources, reading an instruction sheet contained within the learning guide, listening to audiotapes of the readings, viewing a videotape, and making an on-site observation.

Back to the subject of clear directions, note that each step in the sample is clearly stated and that additional clarification is provided, if needed, in the column labeled "Special Instructions."

SAMPLE 6

LEARNING GUIDE: LEARNING EXPERIENCE

LEARNING EXPERIENCES

PAGE 7 OF 20

COURSE NO. 5385

COMPETENCY NO. 076.0

PERFORMANCE ENABLER NO. 2

Demonstrate knowledge of the procedures involved in serving meals to children.

LEARNING ACTIVITIES	SPECIAL INSTRUCTIONS
Read Draper, Caring for Children, pp. 216-217 and 358-362.	You may wish to listen to the audiotapes of these readings. You will find them in the resource center.
Read Barclay and others, Teen Guide to Homemaking, pp. 466-470.	
Read the instruction sheet, "Tips for Meal Service for Children," p. 9.	
View the videotape, CW-6, "How to Get Children to Try New Foods."	If you need help in setting up the videotape playback unit, ask your instructor for assistance.
Visit a child-care center and observe children being served snacks and/or a meal. Record your observations on the form in the instruction sheet, "Observation Form for Mealtimes," p. 11.	Ask your instructor to help you arrange for a visit to an appropriate child-care center. Complete the observation form immediately after leaving the center, not in the presence of the child-care workers.
To check your knowledge of the procedures involved in serving snacks and meals, write a paper listing five or more ways in which you would attempt to make mealtime more attractive or beneficial to the children in the setting you visited.	Arrange with your instructor to discuss your visit and review your paper with you.

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Evaluation activities. Evaluation activities should also be built into the learning experiences to allow for continual feedback on student progress. If the student reads an instruction sheet or outside text, he/she should be tested immediately on his/her knowledge of the content covered.

The type of evaluation activity you provide will depend on what you wish to test. For example, if you wish to test the student's **recall** or **recognition** of information, short-answer items (completion, matching, true-false, multiple-choice) can be used. Sample 7 shows a self-check of this type from the child-care learning guide.

If you want to ask questions that will require the student to **think**, essay items may be most appropriate. If you want to evaluate the student's ability to **apply** information, you may want to require him or her to critique a case study, solve the problem presented in a case situation, or participate in a simulation activity.

Feedback devices. Ideally, the evaluation activities should allow the student to check his or her own performance. The knowledge test would be followed by model answers or an answer key (see sample 8). The case study would be followed by a model critique. The simulation activity would be followed by a checklist for the student to use in evaluating his/her performance.

Some instructors prefer to keep assessment totally in their own hands, contending that if students have access to the answers, they will cheat. This is an impractical notion—and generally unfounded as well.

First of all, instructors will quickly discover that time will not permit them to personally evaluate each student at each step. Second, you can't develop responsibility in students unless you delegate it to them.

Third, evaluation is ultimately based on actual performance. If students "cheat" on earlier activities, either (1) they learn through the reinforcement provided by reviewing the answers, or (2) they do not succeed in actually performing the competency and must recycle. Most students quickly learn to use self-evaluation to truly measure their ability, so that they can test out successfully in the future.

Final Assessment

In CBE, assessment of student proficiency requires actual performance of the competency as the major source of evidence. The final assessment experience is often the same as the practice experience(s)—except that the student now considers him/herself ready to be assessed by the instructor.

Remember, students who are confident that they already possess a competency covered by a particular learning guide should be able to demonstrate proficiency by going directly to the final assessment, without completing the prior learning experiences.

The criteria you will use in evaluating students' performance should be clearly spelled out in the learning guide. These criteria are derived from the competency (task) analysis and should reflect actual job requirements. They should be stated in observable, performance terms to impose as much objectivity as possible.

The final assessment experience and the evaluation tool must both be designed to fit the competency. If, for example, the competency is *Calculate values of voltage, current, and resistance,* then the final assessment may be a paper-and-pencil test, with performance evaluated using an answer key.

For the majority of competencies, however (e.g., *Edit typed copy, Develop a menu for a given occasion,* or *Gap a spark plug*), the final assessment should involve using a criterion-referenced checklist to evaluate the student's actual proficiency in performing those skills. For such competencies, the use of a paper-and-pencil objective test as a **final** assessment tool is **not** acceptable. You cannot measure a student's ability to perform by testing only that student's **knowledge** of how to perform.

The test situation you devise should be as close as possible to the actual situation a worker might be faced with on the job. The same tools, materials, and conditions should be provided. This may mean that live work, real patrons, or a field setting will be necessary. If only a simulated situation is possible, you might need to specify the use of a mannequin, a simulator, or a role-playing situation.

There are also practical problems to consider. First, the test situation must not take so much instructor time as to make it unfeasible. Remember, performance tests are administered to each student individually.

For the same reason, the test procedures should not consume a great amount of materials and supplies. It could get prohibitively expensive, for example, if every student in a home furnishing program were to block and cut upholstery fabric for a sofa slip cover, just to be evaluated on one competency.

Finally, for skills such as diagnosing or troubleshooting, the problem involved must not be the same for every student—or the test would lose its value as word got around. However, all problems must be at an equally difficult level.

SAMPLE 7

LEARNING GUIDE: SELF-CHECK

SELF-CHECK

PAGE 5 OF 20

DIRECTIONS
Check your knowledge of good techniques for supervising children's mealtimes by responding to the following statements. Write "do" in front of each statement that is correct, and write "don't" in front of each statement that describes an incorrect procedure. When you have finished, check your answers with those on the next page.

PERFORMANCE ENABLER NO. 1

COURSE 5385

COMPETENCY NO. 076.0

DO'S AND DON'TS OF SUPERVISING SNACK AND MEALTIME ACTIVITIES

____ 1. Direct each child to "clean up" his/her plate.

____ 2. Give the children a chance to calm down before mealtime by reading them a story.

____ 3. Allow each child to eat whatever he/she likes.

____ 4. Tell the children they can't have dessert if they use incorrect table manners.

____ 5. Require each child to take one bite of each new food that is offered.

____ 6. Give each child an opportunity to serve him/herself.

____ 7. Cut up each child's meat before you begin.

____ 8. Practice strict discipline at the table.

____ 9. Be pleasant, cheerful, and relaxed with the children during mealtime.

____10. Take the opportunity of mealtime to tell children about the illness of a missing child or about misbehavior problems.

____11. Assist all children in thoroughly washing and drying their hands to make sure they are clean before eating.

____12. For comfort, make sure each child is seated in a chair that is the right height.

____13. Encourage responsibility in the children by letting them clear their trays or dishes from the table.

____14. Use positive guidance phrases that tell the children "what to do" rather than "what not to do."

____15. Take as little time for meals as possible in order to get back to more important activities.

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SAMPLE 8

LEARNING GUIDE: ANSWER SHEET

PAGE 6 OF 20

SELF-CHECK ANSWER SHEET

PERFORMANCE ENABLER NO. 1

COURSE NO. 5385

COMPETENCY NO. 076.0

1. don't
2. do
3. do
4. don't
5. do
6. do
7. don't
8. don't
9. do
10. don't
11. don't
12. do
13. do
14. do
15. don't

Checklist items. Criterion-referenced checklists can measure **process**, **product**, **time**, **attitudes**, or more often, **a combination** of those elements. Although developing written checklists may sound difficult, vocational-technical instructors generally have such criteria clearly in mind whenever they judge a student's work.

As a result, it's usually merely a matter of getting these criteria down on paper—formalizing them in writing—so they can be shared with students. Students thus know what standards they're working toward and can evaluate their own performance during practice activities.

A checklist should have at least the following important qualities:

- One checklist should be constructed for each major competency in the program.
- The checklist should be short enough to make it practical for the instructor to use. Perhaps 5 to 10 items are sufficient for a simple skill, 10 to 20 items (at the most) for complex competencies.
- The criteria included must be critical to successful performance of the skill. Minor or trivial criteria just make the instructor's evaluation job more difficult and time-consuming.
- Each criterion should have some qualitative base. It is not enough to record that the student did something; he/she may have done it poorly or very well, and this needs to be shown.
- The items must be simple and unambiguous—quickly read and understood by the students and the busy instructor.
- Items should be stated in parallel terms (e.g., all in the past tense).

Sample 9 shows the final assessment activity and performance checklist for a welding learning guide. It includes primarily criteria related to a final **product**. A product is something tangible—such as a machined part, a set of manicured fingernails, or a healthy philodendron plant.

In occupational training, a finished product sometimes provides the most valid evidence of student proficiency. A product is readily measured, and the measurement can be done with the relative objectivity. Criterion statements can be made to clearly describe an acceptable product with a great deal of accuracy (e.g., *Diameter must be plus or minus 1/1000 inch* or *The document must be typed without errors, erasures, or strikeovers*).

Sample 10 shows the final assessment activity and performance checklist for the child-care learning guide. It includes primarily criteria relating to the **process** followed in performing the skill. It is important to evaluate process in situations such as the following:

- No tangible final product is produced (e.g., *Greet visitors to the office*)
- Critical inner parts of a final product are hidden from view (as in a surgical dressing, where inner aseptic measures and medications are of even greater importance than the outer visible areas)
- Sanitation or safety procedures are of extreme importance and must be meticulously observed
- Evaluation involves "live customer" work (as in cosmetology, where an error in the hair dyeing or permanent process could have long-lasting unhappy consequences)

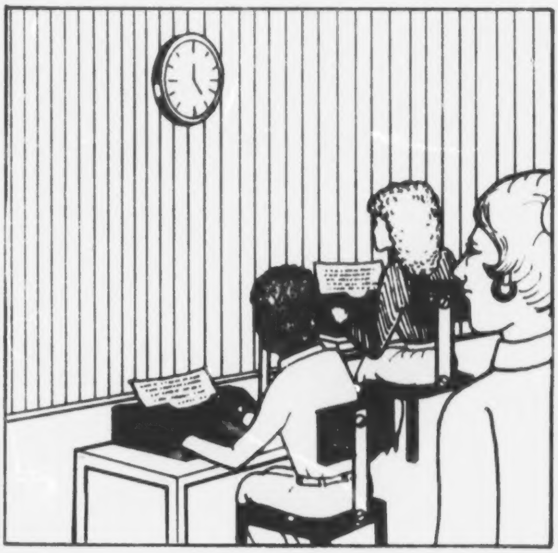
The following is another example of process criterion statements:

- When answering the telephone the student:
  a. identified him/herself clearly
  b. used a pleasant tone of voice
  c. determined accurately what the caller wanted

Often, **attitudes** are crucial to occupational skills. And they're not as impossible to measure as is usually supposed. Measurement just requires a little attention and thought on your part. You need to determine what **behaviors** would indicate the presence of the desired attitudes.

We all say things like, "He's a very courteous person" or "She's a real leader." How do we come to those conclusions? We get clues from a person's actions: he says please and thank you; she volunteers for extra work, and her peers ask for her help.

Some skills involve important **time** factors that must be measured. The batter must be beaten for five minutes. The typist must be able to type 45 words per minute to achieve entry-level competence.



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SAMPLE 9

LEARNING GUIDE: PERFORMANCE TEST A

PERFORMANCE TEST

PAGE 1 OF 1

STUDENT'S NAME	**DATE**

COMPETENCY
WELD 3-PASS AND 6-PASS TEE JOINTS IN FLAT POSITION

TEST ATTEMPT
1ST 2ND 3RD

COURSE NO. 9943

COMPETENCY NO. E-05

DIRECTIONS

At a school work station, weld 3-pass and 6-pass tee joints in the flat position. Based upon items listed below, your instructor's evaluation will determine whether you are competent in this task.

OVERALL EVALUATION

LEVEL ACHIEVED		PERFORMANCE LEVELS
	5	CAN PERFORM THIS SKILL WITHOUT SUPERVISION AND WITH INITIATIVE AND ADAPTABILITY TO PROBLEM SITUATIONS.
	4	CAN PERFORM THIS SKILL SATISFACTORILY WITHOUT ASSISTANCE OR SUPERVISION.
	3	CAN PERFORM THIS SKILL SATISFACTORILY BUT REQUIRES SOME ASSISTANCE AND/OR SUPERVISION.
	2	CAN PERFORM PARTS OF THIS SKILL SATISFACTORILY, BUT REQUIRES CONSIDERABLE ASSISTANCE AND/OR SUPERVISION.
	1	CANNOT PERFORM THIS SKILL.

INSTRUCTOR WILL INITIAL LEVEL ACHIEVED

PERFORMANCE STANDARDS FOR ACCEPTABLE ACHIEVEMENT, ALL ITEMS SHOULD RECEIVE A "YES" OR "N/A" RESPONSE.	YES	NO	NOT APPL.
The Process			
1. The student wore appropriate safety apparel			
2. The student used appropriate safety equipment			
3. The student followed all applicable safety procedures . . .			
The Product			
4. The leg lengths of all 3-pass welds were approximately equal			
5. The welds were free of undercut and porosity.			
6. The finished welds were approximately the same size from end to end on each work piece			
7. Distortion was held to a minimum.			
8. Craters were filled			
9. The throat sizes of all 6-pass welds were approximately equal			
10. The surface ripple of all weld beads was uniform.			

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SAMPLE 10

LEARNING GUIDE: PERFORMANCE TEST B

PERFORMANCE TEST

PAGE 19 OF 20

STUDENT'S NAME	DATE

COMPETENCY
SUPERVISE MEALTIME ACTIVITIES

TEST ATTEMPT
1ST 2ND 3RD

COURSE NO. 5385

COMPETENCY NO. 076.0

DIRECTIONS

Your instructor will assign you a group of children. (1) Serve three meals or snacks to this group. (2) Supervise the group at snack and/or mealtime on three separate occasions. Your instructor will observe and evaluate your performance using the performance test checklist.

OVERALL EVALUATION

LEVEL ACHIEVED	PERFORMANCE LEVELS	
	5	CAN PERFORM THIS SKILL WITHOUT SUPERVISION AND WITH INITIATIVE AND ADAPTABILITY TO PROBLEM SITUATIONS.
	4	CAN PERFORM THIS SKILL SATISFACTORILY WITHOUT ASSISTANCE OR SUPERVISION.
	3	CAN PERFORM THIS SKILL SATISFACTORILY BUT REQUIRES SOME ASSISTANCE AND/OR SUPERVISION.
	2	CAN PERFORM PARTS OF THIS SKILL SATISFACTORILY, BUT REQUIRES CONSIDERABLE ASSISTANCE AND/OR SUPERVISION.
	1	CANNOT PERFORM THIS SKILL.

INSTRUCTOR WILL INITIAL LEVEL ACHIEVED

PERFORMANCE STANDARDS FOR ACCEPTABLE ACHIEVEMENT, ALL ITEMS SHOULD RECEIVE A "YES" OR "N/A" RESPONSE.	YES	NO	NOT APPL.
In preparing to serve food, the student:			
1. provided suitable activities prior to mealtime			
2. organized the area for snack time.			
3. allowed children sufficient hand-washing time.			
4. established a comfortable and relaxed atmosphere			
When serving food to the children, the student:			
5. served food at the regularly scheduled time.			
6. served the food efficiently and smoothly			
7. assisted the children in serving food when appropriate			
8. used garnishes to make the food more attractive.			
9. served correctly sized portions.			
10. provided second helpings when they were asked for.			
While supervising snack or mealtime activity, the student:			
11. guided children toward independence in serving and eating. . . .			
12. allowed children sufficient time for mealtime.			
13. set an example by using acceptable table manners			
14. assisted children in wiping up spills.			
15. encouraged children to try new foods			
16. assigned the children duties during snack time			

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Time standards may come from specific industry documents, such as flat-rate manuals. Or they may derive from general trade agreements and union contracts.

It is important, however, that the time a student takes to **perform** a task to demonstrate entry-level competence is not confused with the time the student needs in order to **learn** that task. In CBE programs, the student should be allowed whatever time is needed (within reason) to learn. Once the task has been mastered, the trainee must then be able to perform it within the time specified by the criteria.

Usually, a single type of criterion is not used alone; it is used in **combination** with others. It is necessary to assess not only the quality of the final product, for example, but also the correctness of the process by which it was completed, as well as how long it took the student to complete it.

Thus, if the short order cook is to prepare and serve a customer's order, we can measure the **time** taken and the **process** followed (e.g., the steps were completed in the most time-efficient order); the **product** (e.g., the order was complete; the customer was satisfied with the appearance, texture, taste); and the cook's **attitudes** (e.g., the cook smiled frequently, used a pleasant tone of voice, was patient when the customer couldn't make up his/her mind).

Sometimes there may be only one criterion (or two) for a particular skill. For example, the weld must not break under the stress test. The machined piece must be within given tolerances. The typist must type 45 words per minute error-free. The only caution here is to be very sure that you have selected a valid and defensible criterion for the skill involved—that you haven't used a percentage to avoid developing the lengthier checklist required.

It is worth reemphasizing that the measurable assessment criteria in a CBE program must be those of the occupation—the ones used by people who assess workers on the job (the foreman, supervisor, or other professional in charge). They cannot be arbitrarily selected by the instructor on the basis of personal preference. All trainees who are to be credited with having achieved a competency must be subject to the same criteria of acceptability.

Rating scales. Every checklist implies some sort of rating scale: yes/no, poor/fair/good/excellent, not acceptable/acceptable/outstanding, or some other. In fact, **each criterion** included in the checklist must be rated, and the **overall proficiency** of the student in the demonstrated competency must be given a rating.

Developing a rating scale for your institution will be one of the more important things you will do as you install CBE. The final result will need to be consistent with the instructional model of the institution and yet fit within the student assessment procedures you devise.

For these reasons, deciding on the rating scale to be used must be done early, as you organize the instructional program. It must not be left until you are in the middle of preparing learning guides.[2]

As far as the production of the actual checklist is concerned, the rating scale to be used must be clearly shown. And beside each criterion, a series of boxes or columns should be provided to allow you to record your rating of the item. If there is a scale to rate the student's overall proficiency in the competency, this scale should also appear on the checklist. (See sample 9, p. 32, and sample 10, p. 33).

Level of performance. Some explanation must be provided concerning how well the student must perform—what ratings are acceptable. In samples 9 and 10, for example, it says at the outset that "for acceptable achievement, **all** items should receive a YES or N/A response." In the Teacher Performance Assessment Form (TPAF) in the module you are reading (see pp. 55–57), the level of performance states, "All items must receive N/A, GOOD, or EXCELLENT responses."

In addition, you may wish to specify—on the checklist—what the learner is to do if that level is not reached. For example, in the TPAF, it states, "If any item receives a NONE, POOR, or FAIR response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s)."

In other words, the learner is given a chance to keep working on the skill until he/she is successful. This may not be stated on each checklist, however. In some CBE programs, this type of information is provided instead during orientation sessions or in orientation materials.

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[2] To gain skill in selecting or devising appropriate rating scales, you may wish to refer to Module K-3, *Organize Your Class and Lab to Install CBE*.

An Additional Component: The Instruction Sheet

If instruction sheets are to be included in your learning package, these may take several forms, as follows:

- **Job sheet**—This form of instruction sheet is designed to give instructions and specifications for doing a complete piece of work (a job). It may include detailed directions in verbal form and/or consist of a working drawing. (Example: *Produce Copies of a Standard Business Card*)
- **Operation sheet**—This is used for teaching a single basic operation or process. The instructions on an operation sheet are adaptable to any job or problem where the operation appears. (Example: *How to Operate the Microwave Oven*)
- **Information sheet**—This type of sheet supplies the student with information that is not readily available from other sources—at least not at the level or in the exact form desired. It may contain information about new techniques or styles, career information, or the technical data needed to do an assigned job. (Example: *Unleaded Gasoline: Its Advantages and Disadvantages*)

As indicated in the previous descriptions, the impetus for producing teacher-developed instruction sheets comes from the need to provide students with up-to-date occupational information in a form that is exactly geared to their informational needs and reading abilities.

Samples 11 and 12 show instruction sheets that are typical of and appropriate to the learning guides you will develop. In general, instruction sheets should be developed according to the following guidelines:

- Use language that is straightforward and easily understood by the students for whom the sheet is intended. Define new terms, and do not use words or phrases that are unusual or ambiguous.
- Supplement the words with sketches, illustrations, and diagrams for greater clarity.
- Give specific directions that are clear and concise. Carefully think through the sequence of the directions.
- Limit each instruction sheet to one or two sheets of paper if possible, but avoid crowding the page.
- Separate the various items, points, or paragraphs by spacing, and by numbers, letters, or bullets (you are reading a bulleted list).
- Develop a uniform format for all instruction sheets so students can easily find the desired information. Space the various divisions of the sheet—such as title, purpose, illustrations, and text—to produce an easily read and attractive document. Using a distinctive color of paper for the instruction sheets also helps students to find and use them.
- Use underlining to emphasize or to distinguish between headings, subheadings, and content.
- Be consistent in your use of terminology to avoid confusion.
- Include only relevant information. Avoid filling the sheet with irrelevent or unnecessary information, no matter how fascinating it may seem.

One further guideline: If, in developing instruction sheets, you draw on copyrighted materials (either by paraphrasing or quoting directly), make sure you give full credit (e.g., in a footnote). Legally, you are required to do so; ethically, you should want to do so. Theft of **ideas** is still theft.

What Developmental Guidelines?

Existing CBE learning guides—those developed elsewhere—are usually adapted, not adopted, for use. Instructors often make materials their own by supplementing and reworking the materials they use, especially in light of their own particular students. This is good.

Just because you suddenly acquire a set of excellent CBE learning guides, this doesn't automatically negate the value of the handouts, readings, demonstrations, exercises, and so on, that you've used successfully for years. Your CBE program should incorporate all the strengths of your prior instructional efforts. CBE simply allows you to organize things in a new and more functional mode.

Preparing to Write Materials

One way to make the transition from conventional instruction to adapting, developing, or supplementing learning guides is to create one file folder per competency. Then you can gather all your usual lesson plans, duplication masters, handouts, exercise sheets, testing devices, and so on, and file each in the appropriate competency file. As you then work on each learning guide, you will have a rich resource file to draw from.

If this sounds to you like a huge task, there are other options—although none quite so efficient.

SAMPLE 11

LEARNING GUIDE: INSTRUCTION SHEET A

INSTRUCTION SHEET

PAGE 1 OF 2

PERFORMANCE ENABLER NO. 1

COURSE NO. 9943

COMPETENCY NO. E-05

SETTING UP WORK STATION AND TACK WELDING TEE JOINTS

Getting Set Up:

CAUTION: BE SURE MAIN ELECTRICAL SWITCH IS IN OFF POSITION!

1. Inspect electrode holder, ground clamp, and cables for the following:
    a. Broken or loose insulators
    b. Loose wires
    c. Cracked or cut insulation
2. Clean weld table, and attach ground clamp.
3. Set welding machine for proper polarity and amperage.

Steps:

1. Take one piece of metal, ¼" x 3" x 8", and place it flat on the table.
2. Take a second piece, ¼" x 1½" x 8", and place it on its edge--approximately in the center of the 3-inch-wide piece--to form an upside-down "T." See Illustration A below.

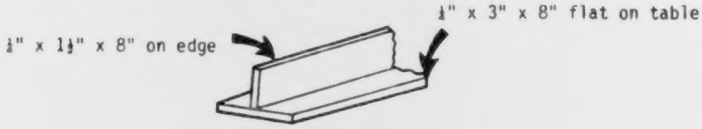

Illustration A

3. Turn on the main electrical switch, and turn on the welding machine.

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SOURCE Content adapted from Ridge Vo-Tech Center, Winter Haven, Florida, 197

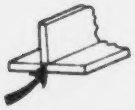
INSTRUCTION SHEET

PERFORMANCE ENABLER NO. 1

COURSE NO. 9943

COMPETENCY NO. E-05

4. Securely tack weld both ends of the tee joint. See Illustration B below.



Tack weld both ends.

Illustration B

5. Turn assembly over, and tack weld remaining 1½-inch-wide piece on the opposite side of the assembly. See Illustration C below.

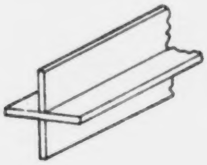


Illustration C

6. Tack weld the second set of tee joints in the same manner.

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SAMPLE 12

LEARNING GUIDE: INSTRUCTION SHEET B

INSTRUCTION SHEET

PAGE 9 OF 20

PERFORMANCE ENABLER NO. 2

COURSE NO. 5385

COMPETENCY NO. 076.0

TIPS FOR MEAL SERVICE FOR CHILDREN

1. Serve food at a scheduled time, because following a fairly regular eating routine is good for a child.
2. Serve foods in a form a child can easily handle, keeping in mind the size of a child's hand and his/her chewing skills.
3. Introduce new foods in small amounts and one at a time. Serve a new food along with something the children like.
4. Serve small portions, and allow an opportunity for the children to have a second helping.
5. Use child-sized portions and utensils and flat-bottomed mugs.
6. Plan for variety in foods. Children like colorful foods. A garnish can add a touch of bright color and pep up a colorless plate.
7. Offer food in a variety of tastes, such as mild, tart, bland, sweet, salty, and sour. Children are often more sensitive to strong flavors than adults, so it is best not to include more than one strongly flavored food in a meal.
8. Offer food in a variety of shapes and sizes. Sandwiches cut in interesting shapes have more child-appeal, and the smaller pieces are easier for a child to handle.
9. Don't fry a child's food or cook it with a lot of seasoning.
10. Offer sweets only at the end of the meal.
11. Arrange the food on the plate for eye appeal and ease in eating.
12. Offer the foods in a variety of forms. Menus may be varied by preparing foods in different ways. Children like to be able to identify the foods they eat.
13. Serve hot foods hot, and cold foods chilled.
14. Serve plates from the left of the child with your left hand. Place beverages from the right with your right hand. This will help avoid accidents, and with practice, this established routine adds to the ease of service.
15. Use care in order to avoid accidents in serving food. If an accident occurs, wipe it up without comment. Don't scold a child for moving and making you spill food.

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Perhaps your present filing system, to some extent, will allow you to retrieve the relevant materials you need. Or perhaps your lesson plans are highly detailed and well organized, providing a resource tool as you work on your learning guides.

The main point is, however, that this sort of preparation needs to be given some attention. It would be a shame to ignore some of the excellent materials and techniques you have used in the past simply because you didn't take time to organize them in a way that ensured that all those relevant to a particular learning guide could be identified and retrieved.

If you are actually developing learning guides from scratch, your materials are part of that "scratch." Once you have your format and your performance objectives and enablers defined, your existing materials—probably broken into smaller units—can become elements of the learning package. Your handouts can become instruction sheets in the learning package. Your transparencies can be photocopied and reduced to become learning package illustrations.

Activities in your lesson plans and excellent reading assignments you've always used can become learning package activities—as long as all materials and activities are still relevant and up-to-date and as long as new activities and materials are considered. Develop and add a performance checklist, and you've got yourself a learning package.

If you have good lesson plans that deliver on the competencies in your program, converting the teacher-oriented plans to student learning guides should be relatively easy. The same lesson parts should be in both: introduction (why learn it), essential background information, demonstration of the skill, guided practice, independent practice, and evaluation. It should be simply a matter of reworking each part so students can pursue the lesson independently.

As shown in sample 13, instructor actions in a traditional lesson plan can become learning steps in a student learning guide. Media and resources are still needed—not for the instructor's use, but for student use. The instructor's lectures and demonstrations are readily translated into information sheets and videotapes. The existing lesson plan, designed for group instruction, thus becomes a basis for a complete and logically sequenced learning guide, available to students when they are ready for the lesson.

Writing the Materials

If your learning guides are to be of high quality and usable by students, they must be written well and at the appropriate level. Writing well means that explanations are brief and clear. Sentences are complete (subject, verb, object) and correctly punctuated. Words are spelled right and capitalized according to the rules.

It also means that the content is logically organized, with transitions provided between ideas. Paragraphs start with a clear, appropriate topic sentence. And the words chosen are not only the best words to clearly state the idea, but are words in your students' vocabularies. Finally, once written, a reading-level check indicates that your material is appropriate for your students.

You can improve your writing skills, if necessary, by referring to appropriate English texts or taking a technical writing course as part of your professional development activities. Preservice or inservice English teachers can be another resource. They may be willing to review your materials and let you know where your writing needs to be strengthened—and to help you do so.

Duplicating the Materials

Before your developed materials can be duplicated, a number of questions must have been answered. How will the materials be produced (e.g., typed, typeset)? How will the materials be reproduced (e.g., mimeograph, photocopier, offset)? Will copies be consumable or reissued over and over again? Will the school supply copies to the students, or will students be asked to purchase their own copies? And so on.

The answers to these questions hinge primarily on money. Funds for the duplication effort must have been set aside in the district, institution, program, or departmental budget. How much money is available will very much affect the duplication process used. (Note, however, that limited funds should never be used as an excuse to prepare poorly duplicated materials. Students should not be expected to struggle through a program using illegible copies of learning guides.)

The institutional level, too, will affect your duplication decisions. For example, postsecondary institutions frequently make instructional materials available for student purchase through an institutional bookstore. At the secondary level, required materials are commonly provided to students—on loan—at no charge. Therefore, if you want the materials to be consumable at the secondary level, you must have the budget to support this.

Another consideration is what printing facilities you have available to you. Does the school have a special arrangement with a local print shop? Does the school have a print shop that could produce the

SAMPLE 13

CONVERTING A LESSON PLAN TO A STUDENT LEARNING GUIDE

TEACHER-ORIENTED LESSON PLAN

Task: Prepare coffee with an electric percolator	
Instructor actions	Media/Resources
1. Present a lecture on why learn to make coffee. a. What is coffee? b. What is it used for? c. Why is it important?	1. Overhead transparencies
2. Quickly review procedure sheet on how to make the coffee with the students. Sample questions: Why is it important to use cold water?	2. Procedure sheet on how to prepare the coffee
3. Present the demonstration, using the procedure sheet as a guide.	3. Procedure sheet and needed materials (should actually be listed)
4. Assign students to practice exercise, and supervise practice.	4. Assignment sheet Materials for students
5. Ask students to continue practicing until they feel they have mastered the task.	5. Materials for students
6. Evaluate: a. Written test b. Performance test	6. a. Written test and answer sheet b. Performance checklist

STUDENT-ORIENTED LEARNING GUIDE

Task: Prepare coffee with an electric percolator	
Learning steps	Media/Resources
1. Read information sheet 12 to determine why prepare coffee.	1. Information sheet 12
2. Review procedure sheet 12 on the basic steps of how to prepare the coffee.	2. Procedure sheet 12
3. View videotape 12 on how to actually prepare the coffee.	3. Videotape 12
4. Ask for the assignment sheet on how to prepare coffee so you can do it.	4. a. Instructor b. Assignment sheet c. Materials
5. Practice making coffee until you feel competent.	5. Materials
6. Ask instructor for evaluation.	6. Instructor

SOURCE: David J. Pucel, "Instructor-Developed CBVE Materials," *School Shop*, 39 (April 1980): 38–41.

materials in the needed quantity and quality? If funds are extremely limited and the school has only a photocopying machine, that may be the most reasonable option.

Whatever decisions are made, the result should be that you have the right **quantity** of materials, available at the **time** when you need them, and of sufficient **quality** to be attractive to and usable by your students.

Evaluating the Materials

CBE learning guides—once acquired, adapted, or developed—are not finished for all time. Technologies change, students change, and you develop new instructional skills and discover new ideas and supporting materials. Furthermore, actual usage of the guides by students will point out elements that need to be modified or changed. Consequently, review and revision (or refinement) of your learning guides should be a continual (or at least periodic) process.

Informal evaluation of the guides is possible on a day-to-day basis. As students use the guides, their successes, difficulties, and questions will indicate whether the materials are clear and usable. If six students have to ask you to clarify the directions for a particular activity, for example, you can probably assume that those directions need to be reviewed and revised.

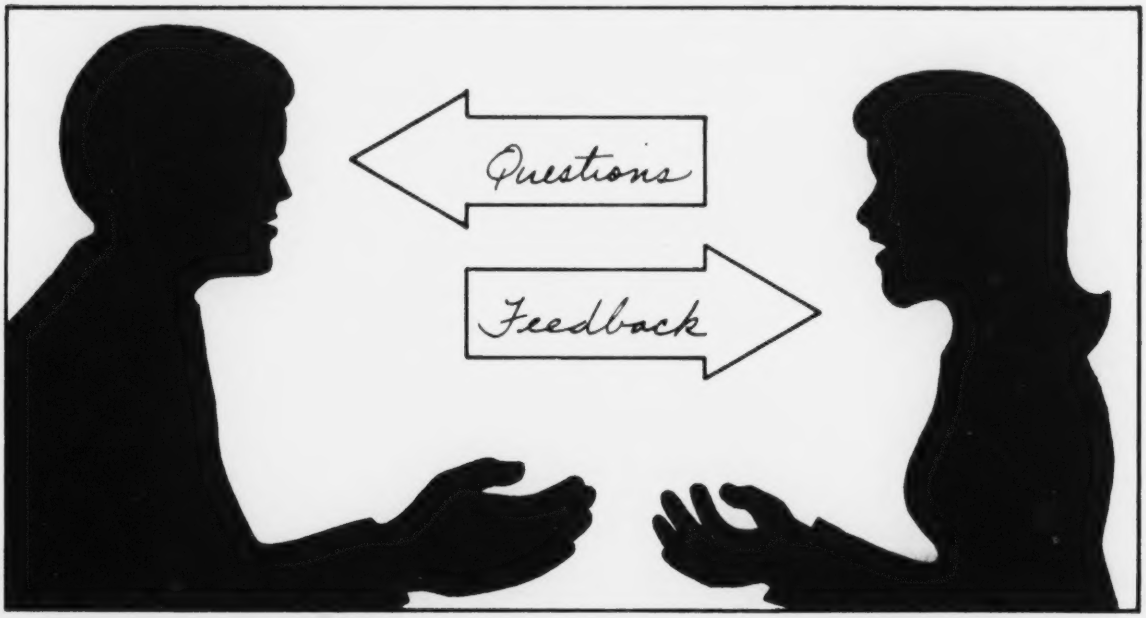
To secure more formal evaluation data, one option used by developers of learning guides is to include a materials assessment form in each package. Each user thus has the opportunity to let you know about his/her experiences with and perceptions about the materials. For example, the form could include the following types of questions:

- Was the guide easy to use?
- Were all the directions clear?
- Was the reading level about right for you?
- Did the activities help you achieve the competency?
- What did you like least about the guide?
- What did you like most about the guide?
- Did you enjoy using this guide? Why or why not?
- How long did it take you to complete this guide?

Users' responses can pinpoint the need for revision. They can also alert you to the types of assistance you, as a learning manager, need to provide to future users.

For instance, assume that you find that it takes most users about three hours to complete a particular guide. If, then, one of your students, John, has spent three days and is still not competent, you will know that he needs your attention. Perhaps he is just a slower learner; a little encouragement could help. Perhaps he is procrastinating and needs a slight nudge. Or perhaps he needs some individual assistance to get over a hump.

By planning in advance to secure informal and formal feedback—on a regular basis—about the materials you have developed and by revising the materials accordingly, your learning guides can continue to meet your instructional needs in the best possible way.



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Optional Activity 2

To explore other approaches to the development of learning packages, you may wish to read one or both of the following supplementary references: Fardig, *How to Write Student Learning Guides: A Handbook;* and/or Andreyka and Beverly, *Manual for Writing Student Learning Guides: The Ridge Format.*

You may also wish to read Pucel, "Instructor-Developed CBVE Materials," *School Shop.* This article makes clear the relationship between a conventional lesson plan and a competency-based instructional guide, and shows how to translate one into the other.

Optional Activity 3

For help in improving your writing skills, the following source is highly recommended: Sabin, *The Gregg Reference Manual.*

Pages xi–xxvi provide five brief essays that deal with a number of specific points of style and how to fit one's use of language to the situation. These are not your typical tedious murmurings of the English scholar. The author deals with each topic with practicality and a refreshing sense of humor.

The remainder of the book deals with writing rules (grammar, usage, style), but it is more thorough than most and is so thoroughly indexed and cross-referenced that finding things is very easy.

You should at least read the essays, but if you want just one "grammar book" for your professional library, this would be a good choice.

Activity 4

Review the student learning guide on cashing checks, pp. 43–46, and on the basis of your knowledge of the key components and characteristics of a CBE learning guide, critique the adequacy of that guide's format and content.

STUDENT LEARNING GUIDE BT-17

COMPETENCY: Cashing checks

Introduction

Ofttimes, a patron who appears before the teller's window at a local bank is there for the unpretentious justification that he/she is interested in cashing a check of which he/she has been the recipient, or a personal check of his/her own which he/she has written in order to withdraw monies from his/her own checking account. Before the teller can dispense to such a customer the designated legal tender desired, a number of procedural steps must be effected by the teller in relation to the check itself in order to ascertain if the check is legally acceptable in every way. Subsequent to a determination of the legal acceptability of the check, the teller then needs to process the check in an appropriate and thorough manner. Within the latitude of this competency-based instructional learning package, prospective bank tellers will acquire knowledge of and skill in the full range of complex competencies requisite to the cashing of a check within the confines of a bank.

Objectives

Enablers:

After completing the readings, demonstrate knowledge of the procedures for validating and processing a check or batch of checks.

Performance Objective:

Given a simulated teller window prepared for cashing checks, a teller's stamp, and an adding machine, cash a single check and a batch of checks. Your performance will be assessed by your instructor, using the Performance Test at the end of this learning guide.

Prerequisites

To complete this learning guide, you must have competency in using an adding machine and in making out cash tickets.

LEARNING EXPERIENCE 1

Enabler: After completing the readings, demonstrate knowledge of the procedures for validating and processing a check or batch of checks.

Read the following: Jones and Laughlin, The Bank Teller, pp. 81-101
Carraway, Bank Teller Skills, pp. 12-22
Hughes et al, "So You Want to Be a Bank Teller," pp. 32-49
Moore, Cashing a Check, pp. 3-9
Brunty and Ross, Check Cashing Made Easy, pp. 8-12
Instruction sheet on paying out currency, p. 3 of this guide

Prepare a one- to three-page report listing and explaining the steps involved in cashing a check.

Ask your instructor to review your report and judge whether you know the procedures for validating and processing a check or batch of checks.

INSTRUCTION SHEET: PAYING OUT CURRENCY

Handling currency is one of the most important functions you perform. Skill in handling currency can be acquired only through practice and application. In paying out currency, the following points should always be remembered:

1. Save time by asking the customer in which denominations he or she prefers to have the currency.
2. Get the amount clearly in your mind. When paying out currency from a split check, be sure to verify the currency count with your adding machine, and check with the tape once more before handing out the currency to the customer.
3. Count out large bills first.
4. Always perform two cash counts:
   a. First as the currency is removed from the drawer
   b. Second as the currency is paid out to the customer
5. Pick up each bill with the forefinger and thumb, rolled to separate it from the remaining bills, and place it in the other hand with the balance of bills to be paid out.
6. Don't count the currency faster than the customer can count; the customer will often recount and hold up the line while doing so.
7. If the customer changes his or her mind about the demonimations, the request should be complied with cheerfully.

PERFORMANCE TEST

Student Learning Guide BT-17

Competency: Cashing checks

Performance Objective:

Given a simulated teller window prepared for cashing checks, a teller's stamp, and an adding machine, cash a single check and a batch of checks. Your performance will be assessed by your instructor, using the Performance Test at the end of this learning guide.

Performance Standards:

In cashing checks, the student:

	Yes	No	N/A
1. identified which checks were acceptable for cashing	☐	☐	☐
2. cashed a single check	☐	☐	☐
3. cashed a batch of checks.	☐	☐	☐
4. followed all steps in the check-cashing process	☐	☐	☐

Level of Performance: For acceptable achievement, all items should receive a YES or N/A response.

Feedback
5

Compare your written critique of the learning guide on cashing checks with the model critique given below. Your response need not exactly duplicate the model response; however, you should have covered the same **major** points.

MODEL CRITIQUE

Module format. This format, which involves typing of all parts, is more complex and time-consuming than necessary. It would be far easier for the developer to use preprinted format pages, containing all the standard boilerplate material. It would then be a fairly simple task to fill in the content.

Such an approach would also be easier for the users. They would quickly become accustomed to the standard format pages and could focus their attention on what is important: the content.

Title page. The title page does include some identifying information: learning guide number, competency statement, objectives, and prerequisites. However, it does not include the program name or the duty area, nor is any space provided for coded information. Although these latter items are less crucial, they are generally helpful in increasing the usability of materials.

The title has not been written in performance terms. It should say *Cash a Check* not *Cashing Checks*. However, the scope of the competency covered is probably quite reasonable for a CBE learning guide.

The statement of the objectives seems adequate. The performance objective has **conditions**, **action**, and reference to the **criteria** to be met, and the one enabler is sufficiently clear. However, there is no enabler covering practice activities; we go right from the cognitive enabler to the performance objective, with no opportunity for practice provided.

The prerequisites appear to be justified and sufficient. Since the performance objective calls for the use of the adding machine, it seems reasonable to require skill in that operation as a prerequisite.

Directions for use. There are almost none! It may be that students in this hypothetical program learn to use the learning guides in an orientation. It may be that, although there are no boilerplate format pages, a standard format is followed. Nevertheless, some internal directions are required.

For example, there are no special instructions provided with the learning activities. Where can those references be found? In a resource center? In a resource box in the classroom?

In addition, the directions provided concerning the report to be written say little beyond, "Write one." The users are told how many pages it should be and the general topic it should cover, but more specific directions might have been helpful—particularly since no criteria are provided.

Introduction. In this guide, the introduction is found on the title page, which is perfectly acceptable. The most glaring error in the introduction is the level at which it is written. This in turn affects its ability to accomplish any of its purposes very well.

The sentences are too long, and there are too many lengthy terms where a simple term would do quite nicely. This would affect students' ability to comprehend the content of the introduction—which would not provide them with much motiviation to go beyond the introduction.

Furthermore, if users don't understand what they've read, they won't be able to grasp why the skill is important to them. Finally, this introduction makes this relatively simple skill seem so complex that many students might not even attempt to achieve it.

Learning experience 1. It is perfectly reasonable to start a learning guide with a cognitive (knowledge) experience, but there are seeming problems with the actual information presented.

First, there is probably no good reason for asking students to read **five** different outside references (62 pages) to get the needed information. If each source contains completely different aspects of the content, this should have been explained to the users in the activity directions. If the information in the various references overlaps considerably, the developer of the guide should have compiled the needed information into a simple, brief instruction sheet.

The instruction sheet on paying out currency may be too brief. A student with no previous knowledge of this subject may easily find this explanation inadequate. In addition, *currency* and *denominations* may not be terms with which the student is familiar; defining them could be helpful.

Instead of simply stating the steps, explanations of each step in the process could have been provided. More could also have been said about **why** these are the correct steps (e.g., why is it important to count out large bills first?). And some of these steps (e.g., Step 5) might have been easier to understand had illustrations been provided.

However, in terms of readability, providing a numbered list of steps in the instruction sheet is helpful.

The self-check may or may not be satisfactory. If the users are getting different pieces of information from all these various sources, writing a report that pulls it all together might be beneficial. However, if the report simply requires students to parrot back the steps listed in the references, that is not an effective measure of their understanding of the concepts.

The feedback device is also very weak. No criteria are provided to assess the adequacy of the report. Such criteria are needed (1) to allow students to know clearly the bases on which they will be rated and (2) to guide the instructor in thoroughly and objectively rating the students' work.

It would probably have been preferable to provide a self-check that could have been easily evaluated by the student using an answer key. Involving the instructor too often cuts down on the time the instructor has available to fulfill his or her other critical functions in facilitating individualized instruction.

A general flaw in this learning experience is its brevity. No media are included, yet a videotaped demonstration of someone processing a check and paying out currency could have been quite helpful. And no variety of learning routes is provided. Students must complete learning activities relying totally on the printed word. No other options are available; no recycling options are available.

Performance test. The overriding problem here is that the student has been routed directly from passive reading to the performance test, with no opportunity for practice. In fact, the instruction sheet states that skill in handling currency can be acquired only through practice—yet no opportunity for practice is provided.

The students should have ample practice before testing out so that they are **confident** in their ability to perform the skill at the time of final assessment.

In addition, the skill of paying out currency is not tested in the performance test—unless it's included implicitly in Item 4.

On the positive side, the type of evaluation tool provided (a performance checklist) is appropriate for the competency (cash checks). However, although one can't be totally sure from the information provided, it may be that the simulation described is not as realistic as it could be.

For example, a teller must often deal with the pressure of a line of people, all in a hurry, waiting to have a variety of transactions processed. The affective skills of dealing with these people are important. The simulation does not cover this aspect of cashing a check, and the three simplistic tasks may not provide a thorough enough picture of a student's ability to cash checks.

The assessment form does include a specified acceptable level of performance. However, it contains too few items, and they are, for the most part, too broad. The student has been asked to perform three tasks, and this checklist primarily just asks, did he/she perform them? The criteria have no qualitative base. The key indicators of competency—process, product, attitudes, time—should have been included, as appropriate.

Item 4, for example, should have been broken out, and the actual steps (process) should have been listed. The skill of paying out currency should have been included. Items related to product, attitudes, and time factors—missing entirely from the checklist—should have been considered.

Finally, there is no explanation concerning how an overall rating will be determined. Will there be an overall rating given? Through what means? In the samples provided in the information sheet in this learning experience, for example, a 1–5 performance-level scale ("cannot perform" to "can perform without supervision") is used—and explained at the top of the performance test.

Overall, although it is neatly typed (with words spelled and capitalized correctly), this a learning guide that needs a good deal of revision.

Level of Performance: Your written critique of the learning guide should have covered the same **major** points as the model critique. If you missed some points or have questions about any additional points you made, review the material in the information sheet, Developing or Adapting CBE Learning Packages, pp. 20–41, or check with your resource person if necessary.

Learning Experience III

OVERVIEW

Enabling Objective

Given a list of simple competencies, develop a complete learning guide covering a competency that you select from the list.

Activity 1

You will be selecting a learning guide topic from the competencies provided on the Suggested Competencies List, p. 50.

Activity 2

You will be developing a learning guide covering the competency you select.

Feedback 3

Your competency in developing a learning guide will be evaluated by your resource person, using the Learning Guide Checklist, pp. 51–52.

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Activity 1

Following is a list of simple, everyday competencies, each of which could be covered in a brief instructional learning guide. Review the list, and select one competency with which you are sufficiently familiar that you could explain to someone else how to perform that skill. (If you would prefer to write on another topic with which you are more familiar, or which is of more interest to you, check with your resource person.)

SUGGESTED COMPETENCIES LIST

- Brush Your Teeth
- Change a Tire
- Set up Your Own Personal Filing System
- Put out a Kitchen Fire
- Pump Your Own Gas at a Self-Service Station
- Plan a Home Garden
- Remove a Stubborn Stain from Clothing
- Prepare Eggs Benedict (or some other dish)
- Repair a Frayed Electrical Cord
- Service Your Spark Plugs
- Refinish a Rocking Chair
  (or some other piece of furniture)
- Treat a Victim of Choking
  (or some other emergency condition)
- Housebreak Your Puppy

Activity 2

Develop a learning guide covering the competency you selected. In developing this learning guide, assume that you are writing it for the same target audience that you will be dealing with when you are actually developing your own learning guides. You may use a format similar to the one provided in the samples in Learning Experience II in this module, another format recommended by your resource person, or one of your own choosing. This activity will include doing the following:

- Developing the performance objective
- Thinking through the topic thoroughly
- Analyzing the competency to determine the knowledge, skills, and attitudes required
- Identifying enablers that will provide knowledge and practice
- Developing a series of learning experiences—one per enabler—that include the following, as necessary:
    - Instruction sheets
    - Practice activities
    - Activities designed to provide continual and immediate feedback
    - Model answers, answer keys, or checklists
- Developing a final assessment experience and performance checklist
- Writing an introduction

Feedback 3

After you have developed your learning guide, arrange to have your resource person review and evaluate it. Give him/her the Learning Guide Checklist, pp. 51–52, to use in evaluating your work.

LEARNING GUIDE CHECKLIST

Directions: Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name

Date

Resource Person

LEVEL OF PERFORMANCE

	N/A	No	Partial	Full
1. There is a title page that provides all necessary identifying information	☐	☐	☐	☐
2. The introduction effectively and briefly does the following:				
a. explains what the skill is and why it is important	☐	☐	☐	☐
b. provides motivation	☐	☐	☐	☐
c. defines key new terms, if necessary	☐	☐	☐	☐
3. The performance objective:				
a. is appropriate for the competency	☐	☐	☐	☐
b. is correctly stated	☐	☐	☐	☐
4. The enablers:				
a. would lead to the accomplishment of the performance objective	☐	☐	☐	☐
b. are correctly stated	☐	☐	☐	☐
5. The learning experiences:				
a. are appropriate for the target audience	☐	☐	☐	☐
b. are varied and interesting	☐	☐	☐	☐
c. are relevant and not repetitive	☐	☐	☐	☐
d. involve a variety of instructional materials	☐	☐	☐	☐
e. include clear directions to the student	☐	☐	☐	☐
6. Practice activities:				
a. are appropriate for the competency covered	☐	☐	☐	☐
b. are practical and realistic	☐	☐	☐	☐
7 Adequate and appropriate activities and devices for immediate and continual feedback are provided	☐	☐	☐	☐
8. The final assessment experience:				
a. requires performance of the skill in a realistic setting	☐	☐	☐	☐
b. involves an activity that is appropriate for the competency covered	☐	☐	☐	☐
c. includes clear directions to the student	☐	☐	☐	☐

	N/A	No	Partial	Full
9. The performance checklist:				
a. includes all essential criteria (product, process, time, attitudes) for assessing achievement of the competency	☐	☐	☐	☐
b. states the criteria in observable performance terms	☐	☐	☐	☐
c. lists only essential criteria	☐	☐	☐	☐
d. is reasonable in length	☐	☐	☐	☐
e. includes an appropriate rating scale	☐	☐	☐	☐
f. includes an appropriate level of performance	☐	☐	☐	☐
10. If instruction sheets are included, each one:				
a. includes up-to-date and accurate information	☐	☐	☐	☐
b. provides sufficient information to teach the skill	☐	☐	☐	☐
c. includes adequate illustrations to supplement the written text	☐	☐	☐	☐
d. is written simply and at the appropriate level for the students involved	☐	☐	☐	☐
11. The learning package is well written in terms of the following:				
a. spelling	☐	☐	☐	☐
b. sentence structure	☐	☐	☐	☐
c. clarity of language; word choice	☐	☐	☐	☐
d. punctuation	☐	☐	☐	☐
e. capitalization	☐	☐	☐	☐
f. vocabulary level	☐	☐	☐	☐
g. reading level	☐	☐	☐	☐
h. brevity	☐	☐	☐	☐
i. organization	☐	☐	☐	☐
12. Clear directions for how to use the learning guide are provided through written explanations or the use of a simple, standardized, self-explanatory format	☐	☐	☐	☐

Level of Performance: All items must receive FULL or N/A responses. If any item receives a NO or PARTIAL response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

Learning Experience IV

FINAL EXPERIENCE

Terminal Objective

In an **actual teaching situation,*** provide instructional materials for CBE.

Activity 1

As part of your responsibilities in implementing a CBE program, provide instructional materials for CBE. This will include—

- identifying, obtaining, and evaluating existing CBE materials
- determining whether existing CBE materials will be used "as is," whether they will be adapted for local use, or whether CBE materials will be developed locally
- developing or adapting CBE materials as needed, either working alone, as a member of a development team, or under the direction of a curriculum development specialist

NOTE: As you complete each of the above activities, document your efforts (in writing, on tape, through a log) for assessment purposes.

Feedback 2

Arrange to have your resource person review your CBE materials and any other documentation you have compiled.

Your total competency will be assessed by your resource person, using the Teacher Performance Assessment Form, pp. 55–57.

Based upon the criteria specified in this assessment instrument, your resource person will determine whether you are competent in providing instructional materials for CBE.

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*For a definition of "actual teaching situation," see the inside back cover.

NOTES

TEACHER PERFORMANCE ASSESSMENT FORM

Provide Instructional Materials for CBE (K-4)

Name ____________________

Date ____________________

Resource Person ____________________

Directions: Indicate the level of the teacher's accomplishment by placing an X in the appropriate box under the LEVEL OF PERFORMANCE heading. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

	LEVEL OF PERFORMANCE					
	N/A	None	Poor	Fair	Good	Excellent
In reviewing existing CBE materials, the teacher:						
1. tapped a variety of sources to identify what was available in his/her occupational area	☐	☐	☐	☐	☐	☐
2. used appropriate and complete criteria for evaluating each of the materials obtained	☐	☐	☐	☐	☐	☐
In determining how CBE materials would be provided, the teacher:						
3. determined whether to acquire, adapt or locally develop materials based on the following:						
a. the CBE model established by the institution/district	☐	☐	☐	☐	☐	☐
b. the quality of available materials and local resources	☐	☐	☐	☐	☐	☐
Before adapting or developing CBE materials, the teacher:						
4. established a format that was:						
a. suitable for the students who would be using the materials	☐	☐	☐	☐	☐	☐
b. consistent with any other CBE materials being used in the institution or district	☐	☐	☐	☐	☐	☐
5. secured additional training in how to develop CBE materials according to local guidelines, if necessary	☐	☐	☐	☐	☐	☐
The system created for organizing and filing resource materials:						
6. is logical and easy to use in terms of retrieving and refiling materials	☐	☐	☐	☐	☐	☐
7. is appropriate for the level of students and type of material	☐	☐	☐	☐	☐	☐
All learning guides meet the following criteria:						
8. there is a title page that provides all necessary identifying information	☐	☐	☐	☐	☐	☐

	N/A	None	Poor	Fair	Good	Excellent
9. the introduction:						
a. effectively and briefly describes the skill covered	☐	☐	☐	☐	☐	☐
b. explains why the skill is important	☐	☐	☐	☐	☐	☐
c. provides motivation	☐	☐	☐	☐	☐	☐
d. defines key new terms, if needed	☐	☐	☐	☐	☐	☐
10. the performance objective is appropriate for the competency and is correctly stated	☐	☐	☐	☐	☐	☐
11. the enablers would lead to the accomplishment of the performance objective and are correctly stated	☐	☐	☐	☐	☐	☐
12. the learning activities are varied, interesting, relevant, and appropriate for the target audience	☐	☐	☐	☐	☐	☐
13. a variety of appropriate and accessible resources are included	☐	☐	☐	☐	☐	☐
14. practice activities are practical, realistic, and appropriate for the competency covered	☐	☐	☐	☐	☐	☐
15. adequate and appropriate activities and devices for immediate and continual feedback are provided	☐	☐	☐	☐	☐	☐
16. the final assessment experience:						
a. requires performance of the skill in a realistic setting	☐	☐	☐	☐	☐	☐
b. involves an activity that is appropriate for the competency covered	☐	☐	☐	☐	☐	☐
17. the performance checklist:						
a. includes **all** essential—and **only** essential—criteria	☐	☐	☐	☐	☐	☐
b. states the criteria in observable performance terms	☐	☐	☐	☐	☐	☐
c. is reasonable in length	☐	☐	☐	☐	☐	☐
d. includes an appropriate rating scale	☐	☐	☐	☐	☐	☐
e. includes an appropriate level of performance	☐	☐	☐	☐	☐	☐
18. if instruction sheets are included, each one:						
a. includes up-to-date, accurate, and sufficient information	☐	☐	☐	☐	☐	☐
b. includes adequate illustrations to supplement the written text	☐	☐	☐	☐	☐	☐
c. respects copyright laws and professional ethics	☐	☐	☐	☐	☐	☐

	N/A	None	Poor	Fair	Good	Excellent
19. the learning guide is well written and well produced	☐	☐	☐	☐	☐	☐
20. clear directions for how to use the learning package are provided through written explanations or use of a self-explanatory format	☐	☐	☐	☐	☐	☐
In ensuring that CBE materials were and remained effective, the teacher:						
21. provided for the continual or periodic evaluation of the materials, including:						
a. evaluation of their effectiveness in classroom/laboratory use	☐	☐	☐	☐	☐	☐
b. evaluation of whether the materials remained up-to-date	☐	☐	☐	☐	☐	☐

Level of Performance: All items must receive N/A, GOOD, or EXCELLENT responses. If any item receives a NONE, POOR, or FAIR response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

NOTES

DACUM/DATA

COMMUNITY COLLEGES OF SPOKANE

Spokane Community College
N1810 Greene Street
Spokane, Washington 99207-5399

April 18, 1988

We need the help of a Vision Care Technician!

In a continuing effort to evaluate our program so that it produces the student who best meets your industry's needs, Spokane Community College recently conducted a DATA (Developing A Task Analysis) workshop with a panel of experts from the Vision Care Technician field. The end product of the DATA workshop was a chart of competencies that can be used in updating the Vision Care Technician program offered by SCC.

As part of this process, we are asking experts like yourself in the Vision Care Technician field to complete the enclosed questionnaire to help us verify the importance and the frequency of each task as well as to identify those tasks that would be expected of an entry level employee.

Your assistance and cooperation in completing the enclosed questionnaire will not only be appreciated but is essential if enough information is to be compiled to make our program evaluation and development plans successful.

Please return the questionnaire by May 10, 1988, in the prepaid envelope provided.

Thank you for your time and effort.

Sincerely,

Marjy A. Borchers

Marjy A. Borchers, Ed.D.
Acting Dean of Instruction

Cheryl Bruce

Cheryl Bruce, Instructor
Vision Care Technology

lgj

Enclosures

VISION CARE TECHNICIAN

DIRECTIONS: This survey lists tasks that a Vision Care Technician might be expected to perform on the job. Each task listed requires three answers. On the enclosed answer sheet, first mark the number that best indicates how important you think the task is for a successful Vision Care Technician. Mark "never" if the task does not apply or if you are not familiar with it. Next, mark the number which best describes the frequency (how often) that you perform the task. And finally, indicate (yes or no) whether the task is necessary for an entry-level position.

PLEASE USE A NUMBER TWO (2) PENCIL TO INDICATE YOUR RESPONSES TO EACH QUESTION.

OFFICE MANAGEMENT

1. Practice good phone techniques.
2. Identify emergencies and take appropriate actions.
3. Assess patient needs and refer to appripriate professional.
4. Identify and solve patient problems (i.e., bills, personnel, and other professionals).
5. Schedule and confirm appointments.
6. Document appropriate patient information.
7. Discuss fees and payment options with patient.
8. Act as liaison between staff, doctor, and patients.
9. Implement effective patient recall system.
10. Maintain and operate office equipment.
11. Maintain filing system.
12. Balance day sheet and write deposit.
13. Submit third-party claims.
14. Process mail.

15. Process accounts payable and receivable.
16. Prepare financial reports (tax, payroll, ledgers).
17. Compose and/or type correspondence as needed.
18. Prepare public relation materials (i.e., newsletters).
19. Prepare and update employee or procedures manuals.
20. Train/orient others as required.
21. Coordinate staff meetings.
22. Interview, hire, supervise and discharge employees as required.
23. Prepare employees' schedules.
24. Maintain adequate office supplies.
25. Assist in other departments where necessary.
26. Perform general housekeeping as required.

PATIENT ASSESSMENT AND PRELIMINARY TESTING

27. Determine reason for patient's visit.
28. Obtain patient history and relevant family medical history.
29. Establish patient rapport and instill confidence.
30. Deal with special patient needs (handicaps).
31. Educate patient about ocular disorders and testing procedures.
32. Verify current prescription and identify special considerations.
33. Measure visual acuity.
34. Perform stereopsis test.
35. Perform color deficiency tests.

	Importance					Frequency					Entry Level	
	Never	Lo	Med	Hi	Very Hi	Never	Lo	Med	Hi	Very Hi		
1	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
2	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
3	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
4	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
5	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
6	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
7	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
8	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
9	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
10	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
11	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
12	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
13	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
14	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
15	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
16	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
17	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
18	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
19	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
20	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
21	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
22	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
23	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
24	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
25	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
26	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
27	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
28	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
29	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
30	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
31	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
32	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
33	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
34	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
35	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
36	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
37	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
38	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
39	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
40	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
41	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
42	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
43	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
44	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
45	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
46	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
47	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
48	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
49	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
50	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
51	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
52	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
53	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
54	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
55	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
56	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
57	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
58	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
59	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
60	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
61	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
62	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
63	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
64	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
65	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
66	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
67	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
68	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
69	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	
70	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	
71	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
72	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
73	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃
74	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃	⊂N⊃

	Importance					Frequency					Lev
	Never	Lo	Med	Hi	Very Hi	Never	Lo	Med	Hi	Very Hi	
76	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
77	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
78	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
79	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
80	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
81	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
82	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
83	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
84	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
85	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
86	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
87	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
88	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
89	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
90	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
91	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
92	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
93	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
94	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
95	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
96	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
97	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
98	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
99	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
100	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
101	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
102	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
103	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
104	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
105	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
106	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
107	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
108	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
109	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
110	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
111	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
112	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
113	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
114	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
115	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
116	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
117	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
118	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
119	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
120	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
121	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
122	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
123	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
124	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
125	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
126	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
127	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
128	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
129	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
130	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
131	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
132	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
133	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
134	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
135	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
136	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
137	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
138	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
139	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
140	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
141	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
142	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
143	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
[illegible]	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
[illegible]		⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
146	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
147	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
148	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃
149	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂0⊃	⊂1⊃	⊂2⊃	⊂3⊃	⊂4⊃	⊂Y⊃

VISION CARE TECHNICIAN

ADDITIONAL COMMENTS

1. "Cheryl - Sorry to be late but this is very long and time consumming to complete. Glad to help as always."
   (Larry Hedgren)

2. "I think a Tech. should be well versed in all areas of the optical field and keep up-to-date.
   (Lynn Lange, Opt. Tech.)

3. "I'm glad to see the questionnaire. This means your trying to keep track of what is happening in the work place."
   (Diane Schaible, Opt. T.R.)

4. "Clean and sterilize soft contact lenses.
   Clean and polish gas permeable contact lenses."
   (Carl Thome, O.D., F.A.A.O.)

5. "Much Too Long"
   (Dr. Lester Caclan)

6. "We have a full service lab with an optician. Being able to edge would be valuable at times to help out."
   (Tamara Taylor, Opt. T.R.)

7. "Computerized visual fields. Computer word processing."
   (Anonymous)

8. "Medicare and other insurance claim."
   (Jamie Boilon)

9. "This survey, albeit effective(?) is too long. I would be interested in knowing how low the response was!"
   (Kenneth C. DeRew, O.D.)

10. "My replies are from my point of view that a Vision Care Technician should be trained in all areas of the office whether the procedure falls into the technical realm or not."
    (Pat Livingston, Opt. T.R.)

11. "Handling patient flow properly. Chair side recording for the doctor."
    (Gilen Vernan, Opt. T.R.)

BRUCE. HERE IS [illegible] VISION CHART

Spokane Community Collage - Survey

	Importance						Frequency						Entry Level	
	0	1	2	3	4		0	1	2	3	4			
estion	Nvr	Lo	Med	Hi	VHi	Mean	Nvr	Lo	Med	Hi	VHi	Mean	Yes	No
1. >	0	0	1	15	78	[redacted]	0	3	11	29	48	[redacted]	89	2
	0%	0%	1%	15%	82%	95%	0%	3%	12%	31%	52%	83%	97%	2%
2. >	0	1	10	37	48	[redacted]	0	24	33	19	16	[redacted]	59	33
	0%	1%	10%	38%	50%	84%	0%	26%	35%	20%	17%	57%	64%	35%
3. >	4	17	26	35	12	[redacted]	7	28	27	20	9	[redacted]	44	48
	4%	18%	27%	37%	12%	59%	7%	30%	29%	21%	9%	48%	47%	52%
4. >	1	6	22	35	33	2.96	1	10	27	36	19	2.67	58	34
	1%	6%	22%	36%	34%	73%	1%	10%	29%	38%	20%	66%	63%	36%
5. >	1	7	13	22	52	3.23	2	14	14	17	45	2.97	81	11
	1%	7%	13%	23%	54%	80%	2%	15%	15%	18%	48%	74%	88%	11%
6. >	0	3	8	29	56	3.44	0	2	12	32	47	3.33	81	12
	0%	3%	8%	30%	58%	85%	0%	2%	12%	34%	50%	82%	87%	12%
7. >	0	7	21	31	36	3.01	0	11	23	21	37	2.91	63	[illegible]
	0%	7%	22%	32%	37%	75%	0%	11%	25%	22%	40%	72%	67%	[illegible]
8. >	0	15	22	30	29	2.76	1	15	23	30	23	2.64	49	44
	0%	15%	22%	31%	30%	69%	1%	16%	25%	32%	25%	66%	52%	47%
9. >	4	17	16	32	27	2.64	7	26	19	22	18	2.20	51	42
	4%	17%	16%	33%	28%	65%	7%	28%	20%	23%	19%	54%	54%	4[illegible]
10. >	2	5	30	36	24	2.77	1	8	31	28	26	2.74	68	25
	2%	5%	30%	37%	24%	69%	1%	8%	32%	29%	27%	68%	73%	26%
11. >	5	11	16	30	34	2.80	5	16	13	22	37	2.75	76	16
	5%	11%	16%	31%	35%	70%	5%	17%	13%	23%	39%	68%	82%	17%
12. >	6	4	20	30	34	2.87	9	11	19	19	31	2.58	70	21
	6%	4%	21%	31%	36%	71%	10%	12%	21%	21%	34%	64%	75%	23%
13. >	7	10	20	27	31	2.68	13	13	15	27	23	2.37	59	33
	7%	10%	21%	28%	32%	67%	14%	14%	16%	29%	25%	59%	64%	35%
14. >	7	18	35	24	12	2.17	5	19	25	28	14	2.30	57	36
	7%	18%	36%	25%	12%	54%	5%	20%	27%	30%	15%	57%	61%	38%
15. >	10	12	21	28	24	2.46	14	17	18	22	20	2.19	47	43
	10%	12%	22%	29%	25%	61%	15%	18%	19%	24%	21%	54%	52%	47%
16. >	32	29	14	14	5	1.27	38	22	13	11	5	1.13	17	70
	34%	30%	14%	14%	5%	31%	42%	24%	14%	12%	5%	28%	19%	80%
17. >	3	21	28	32	11	2.28	5	23	34	21	9	2.07	66	25
	3%	22%	29%	33%	11%	57%	5%	25%	36%	22%	9%	51%	72%	27%
18. >	19	34	31	9	2	1.38	23	41	20	4	2	1.12	22	67
	20%	35%	32%	9%	2%	34%	25%	45%	22%	4%	2%	28%	24%	75%
19. >	17	20	33	22	4	1.75	20	37	22	8	4	1.33	27	[illegible]
	17%	20%	34%	22%	4%	4[illegible] ⑥	21%	40%	24%	8%	4%	33%	[illegible]	[illegible]
20. >	0	6	28	48	12	2.70	3	27	33	23	7	2.04	38	52

SOME TASK RATING OPTIONS

1. IMPORTANCE OF THE TASK -- refers to its criticality to the overall job.

2. TASK LEARNING DIFFICULTY -- refers to how difficult it is to learn to perform the task satisfactorily.

3. FREQUENCY OF TASK PERFORMANCE -- indicates how frequently the task is performed by workers.

4. TIME SPENT PERFORMING THE TASK -- indicates the approximate percentage of work time spent performing the task.

5. CONSEQUENCE OF INADEQUATE PERFORMANCE -- indicates the degree to which inadequate performance affects personnel, equipment, etc.

6. TASK DELAY TOLERANCE -- refers to the amount of delay that can be tolerated without undesirable results.

7. ENTRY LEVEL -- indicates whether performance of this task is expected of beginning workers.

3. PROBABILITY OF DEFICIENT PERFORMANCE -- indicates how likely it is that the task will be performed unsatisfactorily.

9. PERCENT PERFORMING -- indicates the percentage of job holders who actually perform this task.

10. DEGREE OF TRAINING NEEDED -- indicates the amount of training that most workers will need in order to effectively perform the task.

SCOTT COMMUNITY COLLEGE
MUSCATINE COMMUNITY COLLEGE

EASTERN IOWA COMMUNITY COLLEGE DISTRICT

HAZARDOUS MATERIALS TECHNICIAN SURVEY

Please evaluate the following skills, according to the rating scales provided. Circle the number corresponding to the correct response.

Please circle your best estimation to the three rating scales:

Order of Importance to New Employee: "How important" is this skill to new employees?

How Soon After Starting Job Does Employee Use Skill: "How soon" is this skill used by a new employee during the first year of employment?

How Often Does The New Employee Use The Skill: What is the "frequency" of skill used by the new employee?

		Entry Level	Order of Importance to New Employee
		1. Yes 2. No	1. Extremely Important 2. Very Important 3. Important 4. Some Importance 5. Not Important 6. Not Used
I	**INTERPRETING REGULATIONS**		
1-2	1. Consider organization product line and contracts.	Yes No	1 2 3 4 5 6
3-4	2. Determine applicability of regulations (local, state, federal).	Yes No	1 2 3 4 5 6
5-6	3. Identify resources and references.	Yes No	1 2 3 4 5 6
7-8	4. Discuss with regulators varying interpretations.	Yes No	1 2 3 4 5 6
9-10	5. Recommend compliance methods/strategies.	Yes No	1 2 3 4 5 6
11-12	6. Carry out applicable standards (DOT, OSHA, EPA, etc.)	Yes No	1 2 3 4 5 6
13-14	7. Respond to inquiries and requests.	Yes No	1 2 3 4 5 6
15-16	8. Provide input to legislators about new or proposed regulations.	Yes No	1 2 3 4 5 6
17-18	9. Maintain current files.	Yes No	1 2 3 4 5 6
	DEVELOPING PROCEDURES AND PLANS		
19-20	1. Classify materials.	Yes No	1 2 3 4 5 6
21-22	2. Interpret MSDS.	Yes No	1 2 3 4 5 6
23-24	3. Describe goals.	Yes No	1 2 3 4 5 6
25-26	4. Consider audience (primarily users).	Yes No	1 2 3 4 5 6
27-28	5. Ensure regulatory compliance.	Yes No	1 2 3 4 5 6

BEST COPY AVAILABLE

		Entry Level	Mean
INTERPRETING REGULATIONS			
1.	Consider organization product line and contracts.	No	2.9
2.	Determine applicability of regulations (local, state, federal).	Yes	1.1
3.	Identify resources and references.	Yes/No	2.5
4.	Discuss with regulators varying interpretations.	No	3.0
5.	Recommend compliance methods/strategies.	Yes	2.8
6.	Carry out applicable standards (DOT, OSHA, EPA, etc.)	Yes	1.4
7.	Respond to inquiries and requests.	Yes	2.4
8.	Provide input to legislators about new or proposed regulations.	No	3.9
9.	Maintain current files.	Yes	1.6
DEVELOPING PROCEDURES AND PLANS			
1.	Classify materials.	Yes	1.9
2.	Interpret MSDS.	Yes	2.0
3.	Describe goals.	No	2.8
4.	Consider audience (primarily users).	Yes	2.9
5.	Ensure regulatory compliance.	Yes	1.5
6.	Consider organizations product line and constraints.	Yes	3.0
7.	Consider alternative methods and costs.	Yes	2.8
8.	Incorporate environmental and safety program guidelines.	Yes	2.1
9.	Define responsibilities.	No	2.8
10.	Provide information for prevention planning.	Yes	2.5
11.	Design distribution of plan.	Yes	3.0
12.	Distribute handling procedures.	Yes	2.9
13.	Develop forms/records.	Yes	2.9

FIGURE 1

Radiologic Technology

		Order of Importance to New Employee						How Soon After Starting Job Does Employee Use Skill					How Often Does The New Employee Use Skill				
		1. Extremely Important 2. Very Important 3. Important 4. Some Importance 5. Not Important 6. Not Used						1. Within first week 2. After 3 months 3. After 9 months 4. After 1 year 5. Not Used					1. Daily 2. Weekly 3. Monthly 4. Yearly 5. Not Used				
	Technical Knowledge																
1.	Perform basic mathematical functions.	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5
2.	Operate radiographic imaging equipment.	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5
3.	Operate Accessory devices.	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5
4.	Position imaging system to perform radiographic examinations and procedures.	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5
5.	Process radiographs.	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5
6.	Determine exposure factors to obtain diagnostic quality radiographs.	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5
7.	Adapt exposure factors when appropriate	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5
8.	Evaluate radiographic images for appropriate image quality.	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5
	Positioning Skills																
9.	Demonstrate knowledge of human structure, function and pathology.	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5
10.	Position patient to perform radiographic examinations and procedures.	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5
11.	Modify standard procedures to accomodate for patient condition and other variables.	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5
12.	Evaluate radiographic images for appropriate positioning.	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5

SPOKANE COMMUNITY COLLEGE

VOCATIONAL RELATED INSTRUCTION REQUIREMENTS

Related instruction categories will be integrated into all vocational certificate and two-year programs. They will be integrated individually into all programs to the extent necessary to give students job entry abilities for their respective programs and, where applicable, to conform with established institutional minimums. Program faculty, advisory committees, and instructional assistant deans will have the responsibility for identifying competencies to be taught from the following categories to ensure that students have those necessary job entry abilities in related instruction.

A. CORE RELATED INSTRUCTION REQUIREMENTS

All one-year certificate programs must include an institutional minimum total of 9 credits from the core related instruction requirements, and all two-year A.A.S. degree programs must include an institutional minimum total of 18 credits from the core related instruction requirements. The institutional core requirements, categories, examples of each, and credit requirements are listed below.

	Credit. Req. for 1 Yr Voc Cert	Credit Req. for 2 Yr A.A.S.
Written Communication Skills: Appropriate written competencies (e.g., improvement of writing, technical writing, composition, and other program-specific writing competencies.)	2-5 credits	3-12 credits
Computation Skills: Appropriate arithmetical and mathematical competencies (e.g., math for vocational students, developmental math, business math, algebra, and other program-specific computational competencies)	2-5 credits	3-12 credits
Human Relations/Leadership: Appropriate oral, interpersonal, and leadership skills (e.g., job communication skills, intercultural communication, interpersonal communication,	2-5 credits	3-12 credits

management, work ethics, stress management, cooperative education, team/club activities, and student government. Course work in humanities and social sciences may also be appropriate.)

MINIMUM TOTAL CREDIT REQUIREMENTS	9 CREDITS	18 CREDITS

B. PROGRAM-SPECIFIC RELATED INSTRUCTION REQUIREMENTS

No institutional minimums have been set for program-specific related instruction; these areas will be taught at the appropriate competency level determined for each vocational program.

Safety:
Appropriate safety competencies may be met by Applied Occupational Safety 101 or safety curriculum approved for a particular program by the appropriate instructional dean.

First Aid:
Appropriate first aid competencies may be met by Industrial First Aid 111, 211, the P.E. First Aid 174, or first aid curriculum approved for a particular program by the appropriate instructional dean.

Environmental Awareness:
Appropriate environmental awareness competencies may be met by curriculum approved for a particular program by the appropriate instructional dean.

Computer Skills:
Appropriate computer competencies may be met by General Business Software Application courses such as GB 105, 109, 110, 111, 112, 113, 114, 124, 125; engineering courses such as ENGR 120, 121, 122; or computer curriculum approved for a particular program by the appropriate instructional dean.

TITLE III, ACTIVITY IV

COMPETENCY-BASED VOCATIONAL EDUCATION (CBVE)

Competency-based vocational education (CBVE) is defined as "occupational training programs in which required knowledge, skills, and/or attitudes (competencies) are specified before instruction takes place." A CBVE program has the following characteristics:

1) Student performance objectives, which are based on job analysis, are specified and made known to students;
2) Instruction is geared to the individual student;
3) Learning time is flexible;
4) Student evaluation is based on the performance standards needed on the job.

The purpose of curriculum revision is to allow for changes that will maintain up-to-date program and course content in terms of the changing technical knowledge and skill required in today's job market. The primary objective of Activity IV of the Title III grant is to develop competency-based curriculum for vocational programs; **these competency-based revisions are required to meet the Activity IV objectives specified in the Title III grant.**

Method #1
Example #1

CONVERSION OF TASKS TO COMPETENCIES

There are five steps to converting tasks to competencies:

1. Determine priority of task.
2. Identify all items within that task block to be included in the curriculum.
3. Identify all major topics and key points.
4. Write one or more competencies for each item.
5. Construct competency for final evaluation.

STEP ONE: Determine Priority of Task

DATA CHART

Journeyman Sheet Metal Worker

Tasks →

Duties ↓

D. Fabrication

D-7 Use and Maintain Soldering Coppers	3.4 3.1 3.7

x Entry Level (must know)

x Frequency (should be familiar with)

x Importance (low priority)

4.0 - 5.0 High Priority
2.5 - 3.9 Medium Priority
0 - 2.4 Low Priority

STEP TWO: Identify All Items Within That Task Block to be Included in the Curriculum

Tasks

1) Prepare Soldering Coppers
2) Heat Soldering Coppers
3) Soldering

Determining Major Topics from Tasks

1. What does the student need to know **before** beginning the task of preparing soldering coppers?
   - A) Safety aspects
   - B) Furnace operation
   - C) Materials/chemicals to be used

2. What does the student need to know **before** beginning the task of heating soldering coppers?
   - A) Methods of shaping a soldering copper
   - B) Methods of filing a soldering copper
   - C) Methods of tinning a soldering copper

3. What soldering principles or techniques do the students need to learn in the lab?
   - A) Angle of iron
   - B) Heat
   - C) Dip process
   - D) Solder selection
   - E) Sweat soldering
   - F) Skim soldering
   - G) Filler soldering

STEP THREE: Identify All Major Topics and Key Points

Major Topics

1. Safety
2. Furnaces
3. Preparing Soldering Copper
4. Materials/Chemicals
5. Soldering Techniques

Determining the Key Points

1. What aspects of safety need to be covered for this course?
2. What does the student need to know about soldering furnaces?
3. What are the methods involved in preparing soldering copper?
4. What chemicals/materials are used in the soldering process?
5. What techniques are used in the soldering process?

Key Points

Safety

Classroom Safety Procedures
Toxic Fumes
Burns
Personal Protection

Materials/Chemicals

Handling/Storage Procedures
Types of Materials/Chemicals

Preparing a Soldering Copper

Shaping
Filing
Tin Soldering

Furnaces

Functions
Types
Operations

Soldering Techniques

Angle of Iron
Heat
Dip Process
Solder Selection
Sweat Solder
Skim Solder
Filler Solder

STEP FOUR: Write One or More Competencies for Each Item

DETAILED LISTING OF ALL TOPICS AND KEY POINTS TO BE PRESENTED WITHIN THE PROGRAM	OUTCOMES/COMPETENCIES STUDENTS WILL BE EXPECTED TO PERFORM
SAFETY	
Classroom safety procedures Toxic fumes	**Safety Test** 80% Minimum Score
FURNACES	
Functions of furnaces	Identify the types and functions of furnaces.
Types of soldering furnaces Operating Procedures	
	Demonstrate proper safety procedures when lighting a furnace.
MATERIALS/CHEMICALS	
Soldering flux Rosin flux Hydrochloric acid Sal-amoniac Dip solutions Wire brushes Acid swabs	Identify materials/chemicals used in soldering. Differentiate between materials/chemicals and their functions. List the potential hazards of working with soldering materials and chemicals.

STEP FIVE: Construct Competency for Final Evaluation

See the section entitled, "Evaluating Student Performance."

COMPONENTS OF A COURSE SYLLABUS

Required:
- course description
- course outline
- calendar of events
- book/tool/material list
- grading procedures
- major topics and hours

Suggested:
- shop safety rules
- instructor name
- office hours/location/phone number
- specific classroom rules
- attendance/make-up policy

Optional:
- guidelines
- student information
- orientation
- notebook organization
- tips for success

** A course syllabus is intended as a general description of a course. It is **not** inflexible, and it is **not** a step-by-step curriculum guide.

SOLDERING - SHMT 12

Instructor: John Doe
Room 160 Old Main
536-7065

Office Hours: 9:30-11:30 Daily and by appointment.

Text: Soldering Fundamentals, Joe Smith.
Materials: See attached list

Grading Policy: See Attached Sheet

Make-Ups: Make-up exams are discouraged. If extenuating circumstances make it impossible to take the scheduled exam, then prior arrangements must be made. Any make-ups must be completed prior to the return of the exam to the rest of the class.

Attendance: Daily attendance is highly recommended and will likely be reflected in the exam and project scores.

Suggested Student Approach

1. Attend all scheduled classes
2. Attend all scheduled exams
3. Read recommended assigned material
4. Review lecture notes
5. Complete all assignments
6. Meet assignment deadlines

442

SOLDERING - SHMT 12
1 Credit

(22 Hours Lecture)
(66 Hours Lab)

Course Description:
Theory and practical shop experience in soldering techniques. Areas to be covered include the safe operation of soldering furnaces, the types and functions of chemicals used in the soldering process, and soldering techniques.

Course Objectives:
By the end of this course, a student should:
- operate a soldering furnace
- shape copper with a hammer and anvil
- file and tin soldering copper
- demonstrate proper soldering techniques

MAJOR TOPICS TO BE COVERED

Safety	14 hours
Furnaces	25 hours
Materials/Chemicals	7 hours
Preparing a Copper Solder	12 hours
Soldering Techniques	30 hours

Textbook:

SOLDERING - SHMT 12
1 Credit

(22 Hours Lecture)
(66 Hours Lab)

COURSE OUTLINE

I. Safety
   A. Classroom Safety Procedures
   B. Toxic Fumes
   C. Burns
   D. Personal Protection

II. Furnaces
   A. Function of Soldering Furnaces
   B. Types of Soldering Furnaces
      1. charcoal
      2. gasoline
      3. natural gas
      4. butane
      5. oxyacetylene
   C. Soldering Furnace Operation
      1. heat processes
      2. lighting
      3. air intake adjustments
      4. transporting

III. Materials/Chemicals
   A. Handling/Storage Procedures
      1. containers
         a. glass
         b. plastic
         c. ceramic
   B. Types of Materials/Chemicals
      1. dip solution
      2. soldering flux
      3. rosin flux
      4. sal-amoniac
      5. hydrochloric acid

IV. Preparing A Soldering Copper
   A. Shaping Soldering Copper
   B. Filing Soldering Copper
   C. Tin Soldering Copper

V. Soldering Techniques
   A. Angle of Iron
   B. Heat
   C. Dip Process
   D. Solder Selection
   E. Sweat Solder
   F. Skim Solder
   G. Filler Solder

SPOKANE COMMUNITY COLLEGE
TRADE, INDUSTRIAL & APPRENTICESHIP DIVISION

SHEET METAL
BOOK, SUPPLY & TOOL LIST
1988-1989

NOTE: Do not purchase books or tools until advised by the instructor. All books and tools must be in the possession of the student by Monday of the second week of that respective quarter.

****

FIRST QUARTER

BOOKS:

Sheet Metal Basics (MAVCC), Student Guide
Today's 40 Most Frequently Used Fittings/Budzik (red book)
Mathematics for Sheet Metal Fabrication/Delmar Publishers

TOOLS:

1	Riveting Hammer, 12 or 16 oz.
1	Architect Scale Rule
1	Aviation Snips, left-hand
1	Aviation Snips, right-hand
1	Standard Combination Snips
1	Medium-Size Screwdriver
1	12-inch Combination Square
1	Wing Dividers, 12"
1	Scratch Awl
1	Power Tape, 3/4" x 120" or 144"
2	Felt Tip Marking Pens
1	Each - 7" and 10" Vise Grips
1	Pair of Safety Glasses (clear)
1	Drafting Set
1	Center Punch
1	45 Degree Right Triangle
1	30 Degree to 60 Degree Triangle
1	**LARGE** Loose-Leaf, Three-Ring Notebook
1	Body Hammer, square to round - 12 oz.
1	Casio FX-85 Calculator
1	6" Pliers
1	Needle Nose Pliers
1	Roll Masking Tape
	Pencils

SECOND QUARTER

BOOKS:

Basic Sheet Metal Layout and Fabrication (MAVCC), Student Guide

TOOLS:

1	#18 or #24 Dividers - Malco
1	*Each* 12" and 24" with Hundredths Steel Rule
1	Crescent Type Wrench, 8" or 10"
1	Set of Allen Wrenches, to 1/4"
1	6" 'C' Vise Grip
1	10" 'C' Vise Grip
1	Angle Finding Protractor
1	Cold Chisel, 1/2" width
1	Medium Phillips Screwdriver

THIRD QUARTER

BOOKS:

Round Fittings Used Today/Budzik (blue book)

TOOLS:

1	Welding Hood
1	Cutting Goggles
1	Pair of Gloves
1	Slag Hammer
1	Wire Brush

EVALUATING STUDENT PERFORMANCE

Evaluation techniques used in competency-based programs are criterion-referenced tests: **tests which measure a student's performance according to standards set on a job.** It is an accurate measure of exactly what an individual student can or cannot do.

When attempting to evaluate students in a competency-based program, three levels of learning should be measured: psychomotor, cognitive, and affective.

PSYCHOMOTOR - physical, motor-centered skills
COGNITIVE - student knowledge (comprehension, recall, etc.)
AFFECTIVE - attitudes, values, etc.

PYSCHOMOTOR

Two types of instruments are normally used to measure physical skills: **a checklist and a rating scale.** A checklist is used to evaluate the process, and a rating scale is used to evaluate the quality of work. A checklist has a detailed list of steps that a student must follow to perform a job correctly. Measurement is in terms of complete/incomplete, acceptable/unacceptable, yes/no, etc. A rating scale should be broken into areas that can be rated, such as appearance, neatness of work, etc. Measurement is more specific and should provide a variety of choices: excellent, very good, good, fair, poor, etc.

COGNITIVE

Measuring a student's knowledge of facts, data, etc., is usually accomplished with written tests.

Test Types
1) Multiple Choice
2) True-False
3) Matching
4) Completion
5) Short Answer/Essay

AFFECTIVE

Measuring a student's attitudes, beliefs, feelings, etc., can be accomplished in a number of ways.

1) Observation Checklists - class participation, arriving on time, preparation, etc.
2) Rating Scales
3) Interviews
4) Problem Solving/Case Studies
5) Oral Exam
6) Questionnaires/Inventories

TESTING AND EVALUATION
(GRADING)

1. Test on important aspects **not** trivia.

2. Clear concise questions **not** ambiguous.

3. Provide all qualifications for a good response.

4. Evaluations should be up-to-date.

5. Use positive statements; **avoid** negative questions.

6. Four item multiple choice (good standard).

    a. the stem should clearly define the problem
    b. keep response options short

7. Performance evaluation.

    a. provide complete directions and equipment
    b. list all tasks
    c. list criteria for evaluating
    d. product and/or process

8. Don't be afraid to ask students to think, reason, use logic, and understand ethical boundaries. (You must use extreme caution in evaluating these areas.)

SAMPLE CHECKLIST

The checklist is used to verify that a student has performed all the required tasks in the proper order.

Student's Name______________________________________

Evaluator_________________________Date______________

Directions: Check the appropriate box to indicate whether the student performed the indicated task.

PREPARING A COPPER SOLDER

	Satisfactory	Unsatis.
1. Gathered appropriate supplies	______	______
2. Lighting furnace	______	______
3. Mixed dip solutions	______	______
4. Heated soldering copper	______	______
5. Selected proper flux	______	______
6. Applied soldering flux to surface	______	______

Instructor's Comments:

RATING SCALE

Possible Areas to Be Measured:

Initiative:
- Makes effort to complete projects rapidly
- Works extra hours
- Self starting
- Aggressiveness
- Endurance
- Perseverance

Attitude:
- Desire to learn
- Cheerful
- Team member
- Cooperative with others
- Positive
- Mature
- Accepts constructive criticism

Dependability:
- Steady worker
- Completes assignments
- Shares responsibility
- Trustworthy
- Shows leadership abilities
- On time and ready for work

Production:
- Completes projects on time
- Quality workmanship
- Competitive spirit

Safety:
- Safety minded
- Clean work area
- Uses tools and equipment safely
- Safe clothing and shoes
- Uses protective equipment
- Recognizes unsafe conditions

Appearance:
- Clean, neat & properly dressed

Organization:
- Systematically plans work
- Prioritizes work
- Efficient
- Ready for work on time
- Makes good use of time

Tools:
- Possession of hand tools on date required
- Proper use and repair of personal tools
- Proper understanding of shop tools and equipment
- Safe use of tools and equipment

Housekeeping:
- Maintains a clean and safe work area
- Cleans shop area assigned each day

Notebook:
- Complete and neatly categorized

Special Projects:
- 1/5 point per hour devoted to extra assignments

GRADING POLICY

All grading for all classes in the Recreational Vehicle Technician program will be based on the point system. The final grade for each class will be calculated to a percentage. This percentage is determined by dividing the total points earned by the total points possible. This final percentage will then be converted to the decimal grading scale.

Weekly Quizzes:	
10 @ 10pts	100
Unit Tests	
3 @ 100pts	300
Open Book Tests	
3 @ 100pts	300
Lab Evaluation	
100pts	100
TOTAL	**800**

PERCENTAGE	NUMERIC	LETTER
95-100	4.	
94	3.9	
93	3.8	A
92	3.7	
91	3.6	
90	3.5	A-
88-89	3.4	
85-87	3.3	
83-84	3.2	B+
81-82	3.1	
80	3.0	
79	2.9	B
78	2.8	
77	2.7	
76	2.6	B-
75	2.5	
74	2.4	
73	2.3	C+
72	2.2	
71	2.1	
70	2.0	C
69	1.9	
68	1.8	
67	1.7	
66	1.6	C-
65	1.5	
64	1.4	
63	1.3	D+
62	1.2	
61	1.1	
60	1.0	D
59	.9	
58	.8	
57	.7	D-
0-56	.0-.6	F

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LAB EVALUATION SHEET

NAME________________________________ DATE______________________

CLASS_______________________________

QUALITY OF WORK:

- Accuracy
- Efficiency
- Ingenuity (talent)

ATTENDANCE--DAYS MISSED:

0 - Excellent
2 - Average
4-6 - Poor

WORK HABITS:

- Speed
- Interest
- Ambition
- Initiative
- Housekeeping
- Use of protective equipment

CARE OF TOOLS:

- Orderliness of tool box
- Observation
- Safety rules
- Tool maintenance

ATTITUDE:

- Appearance (shave, haircut, dress)
- Physical Fitness & Cleanliness
- Personality Traits
- Language
- Integrity
- Behavior or deportment
- Ability to work with others

QUALITY OF WORK			
30 Excellent			
28 Above Average			
26 Average			
24 Below Average			
20 Poor			

WORK HABITS			
20 Excellent			
18 Above Average			
16 Average			
14 Below Average			
10 Poor			

ATTITUDE			
20 Excellent			
18 Above Average			
16 Average			
14 Below Average			
10 Poor			

ATTENDANCE			
20 Excellent			
18 Above Average			
16 Average			
14 Below Average			
10 Poor			

CARE OF TOOLS			
10 Excellent			
9 Above Average			
8 Average			
7 Below Average			
5 Poor			

PREREQUISITES FOR A SUCCESSFUL TASK ANALYSIS APPROACH TO CURRICULUM EVALUATION THROUGH USE OF THE DATA WORKSHOP

1. Obtain commitment from the top down. In order to insure the smoothest possible introduction of the task analysis approach to curriculum development and the overall success of the process, it is critical that the college president, deans and department heads are fully informed of procedures and benefits of the process. These decision-makers must demonstrate their commitment to the process to everyone in the organization. Time and resources must also be allocated before the project is undertaken.

   Levels of mutual trust and understanding about the specific purposes of the process must be established in order to offset fears among some faculty members that "the administration is out to get me."

2. Institutional goals reflecting the purposes for curriculum evaluation should be developed with continuing feedback and input from all personnel who will be affected by a comprehensive task analysis. These goals should consider the sequence of events in planning and implementing a task analysis approach to vocational program evaluation which rely heavily upon faculty involvement and cooperation. Questions similar to the following must be addressed in the institutional goals:

   * "Why are we conducting a task analysis?"

   * "What will we do with the information once we gather it?"

   * "How will we upgrade faculty skills if that is deemed necessary?"

   * "If new equipment needs are identified, how will they be funded?"

Support from faculty in identifying panelists, completing the verification process and ultimately revising curricula cannot effectively be accomplished without support and commitment from those involved; therefore, they should contribute to the objectives.

3. Resources for administration of the program must be identified including a coordinator, facilitators, recorders and support staff. A room with a long, clear wall must be made available to conduct the panel workshops. (See Appendix B, page 31) Hopefully, this space will be accessible with the least amount of disruption to existing academic programs.

4. Adequate orientation and training for coordinators, facilitators and recorders must be provided. It is important that the very early task analysis workshops provide meaningful information and thereby demonstrate to all that it is an effective means of developing or evaluating vocational curricula.

STEPS OF THE DATA WORKSHOP: A TEAMWORK APPROACH

Step 1: Greeting and Orientation of the Panel Participants:

First impressions created by the workshop participants are critical for the success and quality of the finished DATA chart. Therefore the greeting and orientation should set a positive tone for the two-day session.

In order to communicate the college's appreciation for the time and expertise of the panelists, the president, whenever possible, will greet the participants. It has been our practice at Spokane Community College to have the facilitator introduce the president. He welcomes the panelists, emphasizes the importance of their contributions to the quality of vocational education on our campus and provides a brief overview of the objectives of using this approach for vocational curriculum evaluation.

Of course, each panelist is greeted individually as he or she arrives. Coffee, tea and doughnuts or muffins are available at this time and throughout the two-day workshop.

The location of the restrooms is identified and the panelists are invited to refresh their coffee at any time.

The next phase of the orientation step is to explain the process of the workshop to the participants. Explain how a facsimile of the chart will be created on the wall and point out that their names will appear on the finished document as authors of this task analysis. The recorder can then start the sign-in sheet which permits participants to print their names just as they would like them to appear on the finished chart. (See Appendix C, page 32)

By using slides or transparencies, the facilitator explains the philosophy of the task analysis workshop, the operational guidelines and the rules for brainstorming. Copies of the slides used at Spokane Community College are included in the appendix. (See Appendix D, page 33)

Additional reinforcement for why these individuals have been asked to participate in the workshop is included in the DATA philosophy:

- * Expert workers are better able than anyone else to describe and define the tasks they perform
- * Any job can be effectively and sufficiently described in terms of the tasks performed
- * All tasks have direct implications for the knowledge and attitudes that workers must have to be successful

The facilitator should emphasize the importance of brainstorming while showing the operational guidelines slides. The value of synergism and building on each other's ideas is critical. The operational guidelines stipulate that during brainstorming the panelists:

- * participate equally
- * share ideas freely
- * hitch-hike on each other's ideas
- * provide constructive suggestions rather than negative criticisms
- * consider all task statements carefully
- * do not use any references
- * begin all task statements with an action verb and see that each statement reflects an observable performance
- * and do not look to observers for assistance.

Once the process has been explained and any questions the panelists might have are answered, participation in the actual workshop begins. This involves:

Step 2: Review the Occupation:

Explain to the panelists that their first order of business will be to develop a brief job title followed by a job description. Identify the scope of their collective jobs and determine which, if any, areas should be excluded.

When they have a job title and job description with which they are at least temporarily satisfied, go on to the next step.

Step 3: Identify the Duties Related to the Occupation:

Using the job title and description as a reference, brainstorm those categories or general areas of responsibility which will be listed on the chart as the job duties. (See sample DATA chart. (Appendix O, page 102)

Step 4: Identify the Specific Tasks Performed:

Related to each duty will be anywhere from 5 to 25 task statements which outline the scope of each duty. There are several guidelines to help keep these task statements performance-related. It is especially important that all statements are action oriented - that is, they must start with a verb.

Job tasks:

* have a definite beginning and ending

* can be performed over a short period of time

* consist of two or more steps

- can be observed and measured

- result in a unit of production, service, or a decision

Task statements:

- contain an action verb and an object. An example would be: (The worker must be able to. . .) ". . .**maintain** a system for stocking and issuing spare parts."

- may contain one or more relevant qualifiers. Omit qualifiers such as **effectively** and **efficiently**

- never include references to **knowledge** and **understanding**

- may imply proficiency of other preliminary tasks. For example, "The worker must be able to operate the metal lathe." This implies that the worker can mount the blank stock, set and adjust cutting tools and perform other prerequisite tasks.

Step 5: Sequence, Prioritize and Review All Statements:

At this stage of the workshop, the panelists are requested to first prioritize the duties - identify which of the bands on the wall should appear first on the finished chart, which is second, third, etc. Then the task statements for each general category are sequenced to the right of their respective duties. At the same time, since they are evaluating each statement on the wall, participants should review the specific wording and mutually agree that each statement clearly expresses their intent.

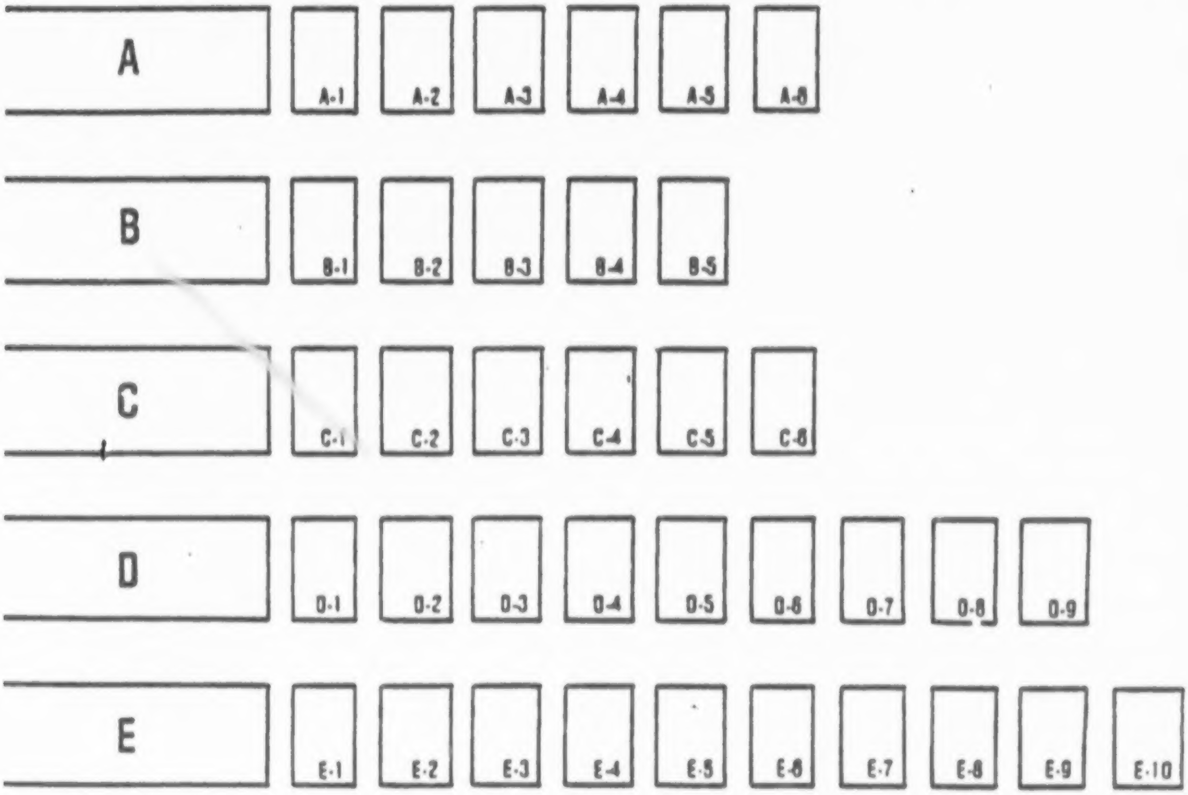
Almost without exception, the workshop participants will eliminate some statements and combine others.

Step 6: Finalize the Chart and Close the Workshop

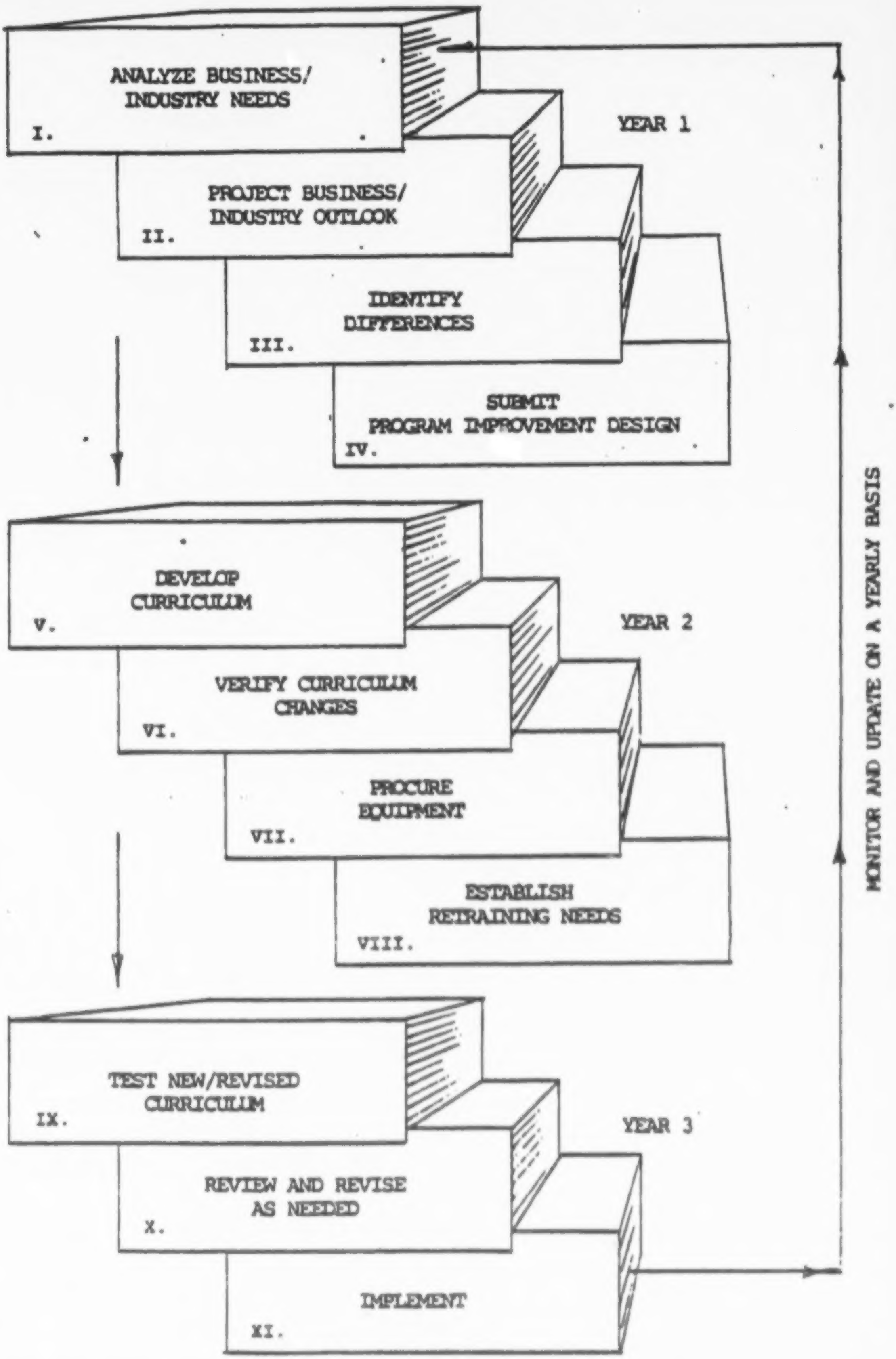
Instructors are usually invited to lunch with the panelists - especially on the second day. At this time it is a good idea to invite the workshop participants to visit the shops, labs or classrooms of the program being studied after the completion of the DATA workshop. The instructors serve as host/guides for the tour, describe current program content, and answer questions.

Following lunch on the second day, panelists are asked to again review and finalize all segments of the chart prior to closing the workshop.

DIAGRAM OF TYPICAL WALL LAYOUT


A
A-1
A-2
A-3
A-4
A-5
A-6
B
B-1
B-2
B-3
B-4
B-5
C
C-1
C-2
C-3
C-4
C-5
C-6
D
D-1
D-2
D-3
D-4
D-5
D-6
D-7
D-8
D-9
E
E-1
E-2
E-3
E-4
E-5
E-6
E-7
E-8
E-9
E-10

DEVELOPMENT MODEL FOR COMPETENCY-BASED CURRICULUM


ANALYZE BUSINESS/ INDUSTRY NEEDS
I.
PROJECT BUSINESS/ INDUSTRY OUTLOOK
II.
IDENTIFY DIFFERENCES
III.
SUBMIT PROGRAM IMPROVEMENT DESIGN
IV.
YEAR 1
DEVELOP CURRICULUM
V.
VERIFY CURRICULUM CHANGES
VI.
PROCURE EQUIPMENT
VII.
ESTABLISH RETRAINING NEEDS
VIII.
YEAR 2
TEST NEW/REVISED CURRICULUM
IX.
REVIEW AND REVISE AS NEEDED
X.
IMPLEMENT
XI.
YEAR 3
MONITOR AND UPDATE ON A YEARLY BASIS

PROGRAM IMPROVEMENT DESIGN (PID)

The program improvement design process (PID) was developed to assist faculty in the creation and/or revision of curriculum content; it is a model of a systematic approach to curriculum revision/development. Following the completion of the DATA process and subsequent verification, the program improvement design process consists of the following steps:

1) **Determine necessary changes in program content;**
2) **Identify related education needs.**

Based on the anticipated curriculum changes listed above,

3) **Identify faculty training needs;**
4) **Determine equipment update requirements.**

Once the above issues have been considered, the PID is then used as a tool to:

5) **Determine equipment budgets for each program;**
6) **Identify funding needs for faculty training.**

Implementation of proposed changes are detailed in the three-year planning guide found at the end of the PID form. These changes include structural changes within a program; the addition of related education and support courses; acquisition of goods and services and equipment; and the training and/or retraining of faculty.

PROGRAM IMPROVEMENT DESIGN

PROGRAM:

DEPARTMENT CHAIR:

SUBMITTED BY:

DATE:

I. FUTURE INDUSTRY AND PROGRAM DIRECTION

A. Within your **industry/profession** (not your program), identify the changes you foresee in the next 3-5 years. (Resources may include verified DACUM charts, industry assessments, advisory committees, seminars, professional organizations, trade magazines, personal contacts, etc.)

B. Based upon the changes identified, list the additions or deletions you feel would be necessary to update your **program/course of study.**

Additions:

Deletions:

II. RELATED INSTRUCTION

A. Identify the college vocational related instruction components currently required in your program.

	Course Prefix & Number	Credits
Written Communications		
Computation Skills (Math)		
Leadership/ Human Relations		

B. If you feel any of the above material is embedded (being taught, not just being used) in your current curriculum, please list the subject area (written communications, etc.), then the course prefix and number where it might be identified.

C. Please list (by prefix, number, and title) all courses that identify, as an integral part of the course, any of the following State Board for Community College Education requirements:

1. Safety and Occupational Health

2. Work Ethic

3. Leadership Training

D. The following items may be required by individual programs, as specified by the appropriate assistant dean. Please identify components by course prefix and number if they are currently required in your program.

1. First Aid

2. Computer Skills

3. Environmental Awareness

4. Ethics

5. Other

E. Identify additions and/or revisions of related instruction that will be necessary to meet state, college, and division requirements.

III. ANTICIPATED FACULTY TRAINING NEEDS

A. Identify faculty training needs to meet the changes within the program or course of study.

B. Identify possible sources, duration, and location of training available. List dates, if possible.

C. Identify those faculty needing retraining. Identify instructional area.

D. Specify those faculty positions that will be necessary to fill while retraining is taking place and identify the instructional area. As nearly as possible, list the duration of classes/ training.

IV. EQUIPMENT NEEDED TO SUPPORT CHANGES

A. List equipment needed to implement program changes shown in **Section I.**

B. To assure that equipment is current and readily available, identify possible vendors and anticipated delivery time.

C. List room number/numbers where new equipment will be used or housed. If additional space will be required, attach implementation plan.

D. Identify all installation needs. (e.g. wiring, plumbing, lighting, compressed air, etc.)

E. List goods and services, software, and consumables needed to support the new equipment listed.

F. List any maintenance/service contracts that may be necessary. Identify availability and cost.

G. List other programs that may be able to share this same equipment.

H. Identify possible funding sources (foundation, business, industry, etc.). List any potential sources for donations.

I. List total equipment costs and sequence priorities with program planning guide.

V. **STAFFING, CURRICULUM DEVELOPMENT, PLACEMENT/ENROLLMENT, AND CONTINUING EDUCATION.**

A. What, if any, **staffing** changes will be necessary?

B. Who will be responsible for developing and writing revised and/or new curriculum?

C. In what ways do the changes you foresee in the next 3-5 years affect the **placement/enrollment** of graduates?

D. Identify any potential continuing education classes (night classes).

DEPARTMENT CHAIR ______________________

ASSISTANT DEAN_________________________

VI. THREE YEAR PROGRAM PLANNING GUIDE

BASED UPON PROGRAM CHANGES, EQUIPMENT, AND RETRAINING NEEDS, OUTLINE THE PROGRAM OBJECTIVES FOR THE FOLLOWING THREE YEARS. PRIORITIZE AS NECESSARY.

19__, 19__ 1.

2.

3.

4.

19__, 19__ 1.

2.

3.

4.

19__, 19__ 1.

2.

3.

4.

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PROGRAM IMPROVEMENT DESIGN

PROGRAM: General Business

DEPARTMENT CHAIR: Sharon Niblock

SUBMITTED BY: Sharon Niblock

DATE: December, 1988

I. FUTURE INDUSTRY AND PROGRAM DIRECTION

A. Within your **industry/profession** (not your program), identify the changes you foresee in the next 3-5 years. (Resources may include verified DACUM charts, industry assessments, advisory committees, seminars, professional organizations, trade magazines, personal contacts, etc.)

1. More highly trained work force needed.
2. Reading, computational, communication, human relations, and problem solving skills required.
3. Global economy perspective needed.
4. "Generalist" employees very marketable.
5. Technical and social skills equally important (i.e., team effort, work ethics, critical thinking skills, flexibility, to mention a few).
6. Competition will require rapid response affecting decision-making and hi-tech systems.
7. Cross training of employees may be norm.
8. Life long learning opportunities essential for survival.
9. Change is norm.
10. Employee in the early 21st century presently in school.
11. Local, state and federal government regulations continue to affect the work place (EEO, human rights, OSHA, health).
12. More service industry jobs (by the year 2000 only 8% of jobs will be in manufacturing).
13. More part-time, lower paying positions with little or no fringe benefits.

14. More women, minorities and immigrants seeking employment opportunities.

15. Spokane's local economy shows a few "bright spots."

B. Based upon the changes identified, list the additions or deletions you feel would be necessary to update your program/course of study.

Additions:

- Marketing added as a program requirement (The "generalist" will now truly be a generalist in areas of management, accounting, marketing, and business).
- Introduction to International Business strongly recommended as a business elective. (It is the intent of this program to allow students maximum flexibility so that they can "tailor make" schedules based upon their own interests; therefore, the program shouldn't dictate all required classes.)
- On resumes, students receiving the A.A.S. Business degree should add "with emphasis in..." and name the general business area in which the most coursework was taken.
- Critical thinking skills embedded in curriculum.

Deletions:

None

II. RELATED INSTRUCTION

A. Identify related instruction components **currently** required in your program.

COURSES PROVIDED BY OTHERS

	Course Title	**Credit**
COMMUNICATIONS		
oral	Speech for Bus.	3
	or	
	Intro. to Speech	5
written	English 101	5
	Business Corres. OR	5
	*Grammar & Punct.	5
	**Eng. 201 or Eng. 205	
terminology		
COMPUTATIONS		
math	Business Math 104	5
	*Business Math 103	5
Reinforced math skills	Accounting 101 OR	
	Accounting 51 AND	
	Accounting 52	5
LEADERSHIP/HUMAN RELATIONS	Leadership	6-18 (optional)
	Human Relations	5
	Princ. of Mgt.	5

*Class is prerequisite to class listed above.
**Needs to be approved by DICC.

B. Are any of these subject areas embedded in your **current** curriculum?

	YES	**NO**
COMMUNICATIONS oral written terminology	_____	_____
COMPUTATIONS math	_____	_____
LEADERSHIP/ HUMAN RELATIONS	_____	_____
COMPUTER SKILLS	_____	_____
SAFETY	_____	_____

C. Identify additions, revisions, and/or deletions of related instruction that will be necessary.

None

III. ANTICIPATED FACULTY TRAINING NEEDS

A. Identify faculty training needs to meet the changes within the program or course of study.

1. More experience with "hands on" applications using computers or other hi-tech systems.
2. Increased attendance at workshops or conferences pertaining to business topics.
3. Participation in summer internships, part-time employment or sabbaticals to keep current in general business areas (or the quarter or for the school year).
4. Participation in meaningful PIU activities (might include enrollment in college credit coursework, professional organizational membership with release time to attend day time meetings).
5. Participation in curriculum training, i.e., to "embed" critical thinking skills, others.

B. Identify possible sources, duration, and location of training available. List dates, if possible.

1. SCC computer lab where faculty could enroll in a variety of computer user classes or receive hands-on experience with a wide variety of software packages.
2. Internships, both paid or unpaid (probably local business community)--block of time needed for meaningful experience.
3. Workshops, conferences and seminars.
4. Approved college sabbaticals.
5. Area college and university courses.
6. Monies budgeted for professional membership dues in "business" type organizations.

This training might be throughout the school year or concentrated training each fall during Orientation Week.

C. Identify those faculty needing retraining. Identify instructional area.

All faculty within the Department of Business & Management at SCC need training on computer usage and computer applications pertinent to general business areas. Because of changes occurring rapidly in the business environment, it is essential that Business & Management faculty keep current. With the Carnegie Foundation's Critical Thinking grant, the faculty will need training and development time to embed critical thinking skills into the curriculum. This might include departmental or individual training sessions.

D. Specify those faculty positions that will be necessary to fill while retraining is taking place and identify the instructional area. As nearly as possible, list the duration of classes/training.

The faculty within the Department of Business & Management at SCC need the equivalent of one-third release time per quarter per year to take advantage of opportunities to keep current within our area of expertise and to increase our skills in other areas.

The faculty member's class will be taken by part-time instructors at an approximate cost of $1,000 per class.

As needed, faculty will need time to make curriculum revisions that will embed critical thinking skills--after training has occurred.

IV. EQUIPMENT NEEDED TO SUPPORT CHANGES

A. List equipment needed to implement program changes shown in **Section I.**

The equipment needs for General Business are the same as those listed on the PID Core Curriculum for General Business, Management, Marketing and Professional Sales. It is imperative in a rapidly changing business environment that Business & Management faculty and students have access to state-of-the-art equipment that will make our students skilled and marketable.

1. Adequate access time (estimate 10-30 hrs. per quarter per student) to computers for students so they can do assignments using a variety of simulations pertaining to business classes taken.
2. Computers/printers for every faculty member within the Department of Business & Management.

3. Software needed for business applications and simulations.

4. Other hi-tech systems, including desk-top calculators or state-of-the-art replacements, to stay current within our field. See C below for some detailed hi-tech systems. However, we are not limited to only those names.

B. To assure that equipment is current and readily available, identify possible vendors and anticipated delivery time.

Local vendors are available. Equipment must be compatible with other computers already being used on campus. Service and maintenance is also available on a local basis.

C. List room number/numbers where new equipment will be used or housed. If additional space will be required, attach implementation plan.

All Department of Business & Management faculty offices will need computers, printers and computer tables (one each in every office). In addition, the following classroom equipment is needed:

Room 231 - a computer projector
233 - 6 computers and 3 printers with tables (student use)
233 - desk-top calculators or state-of-the-art replacements (must have 30 operating at all times; suggest a replacement schedule be established and adhered to).
231 - two cable television monitors
224/231 - two overhead projectors
224 - extra large white projector screen

D. Identify all installation needs. (e.g., wiring, plumbing, lighting, compressed air, etc.)

Dedicated wiring for computers in each faculty office. Installation cost associated with television monitors in Room 231.

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E. List goods and services, software, and consumables needed to support the new equipment listed.

Software packages as appropriate for core curriculum.
Computer paper and ribbons.
Calculator ribbons and paper tape.
Projector bulbs for overheads.
Transparencies and pens.
Current videos to learn up-to-date business and management concepts.
Appropriate wall boards (blackboards) on which to show overheads and project from the computer projector.

F. List any maintenance/service contracts that may be necessary. Identify availability and cost.

Computer maintenance contracts need to be "tied in" to existing contracts on campus.

Maintenance is needed for desk-top calculators or its state-of-the-art replacement and on any other hi-tech systems that are used in a learning environment.

For overhead projectors and computer projectors, there will need to be audio visual maintenance (probably through the school).

G. List other programs that may be able to share this same equipment.

Programs throughout the school will be able to use this equipment because the Department of Business & Management classes serve a wide range of student needs--students who merely want some "business concepts" to enhance their learning, to students who are required to take various classes within their program for degrees, to students enrolled in one of our department's A.A.S. degree programs--General Business, Marketing, Management, and Professional Sales as well as our one-year certificate programs of Business Occupations and Management. The other college areas will be served on an availability basis.

H. Identify possible funding sources (foundation, business, industry, etc.). List any potential sources for donations.

Title III Funds
College budget
District Foundation
Publishing companies
Local business community
Carnegie Foundation and other sources for critical thinking skill development.

I. List total equipment costs and sequence priorities with program planning guide.

(Listed in priority order)

1. Videos @ $650 each - $6,500
2. Transparencies and pens - $200 per year
3. Projector bulbs - $100 per year
4. Calculator ribbons and paper tape (ribbons @ $2; paper tape @ $.50 roll) - $400 per year
5. 6 desk-top calculators replaced each year @ $125 each (or state-of-the-art replacements) - $750 per year
6. 2 overhead projects @ $300 ea. & larger screen for Rm. 224-$1,000
7. 9 computers and 9 printers with tables @ $3,500 each (faculty use) - $31,500

7a. Dedicated wiring where needed in faculty offices and classrooms [one time cost estimate $3,000 (school maintenance)]

8. Computer paper and ribbons - $300 per year
9. Software packages (range $200 to $600 each) estimate $2,000 yr. Some software will come from textbook publishers.
10. 6 computers and 3 printers with tables @ $3,500 each (student use) Total cost $21,000
11. Computer projector @ $900
12. 2 cable television monitors @ $500 = $1,000

V. STAFFING, CURRICULUM DEVELOPMENT, PLACEMENT/ENROLLMENT, AND CONTINUING EDUCATION

A. What, if any, staffing changes will be necessary?

None are necessary for our full-time faculty within the Department of Business & Management. However, we need the "best qualified" instructors to teach the subject matter class, not necessarily the instructor who needs a full schedule; we are looking for quality of instruction that includes expertise, vocational experience, and subject matter knowledge. Our staff does not need to change; however, it is anticipated that additional training may be necessary to meet scheduling demands.

B. Who will be responsible for developing and writing revised and/or new curriculum?

Faculty currently teaching the general business classes will be responsible for writing revised curriculum. Faculty may choose to work in "teams" when more than one faculty member is assigned a class or faculty may choose to "designate" one member to write curriculum.

C. In what ways do the changes you foresee in the next 3-5 years affect the **placement/enrollment** of graduates?

The revisions/changes made in the General Business A.A.S. program are designed to make our student "true generalists" -broad based with skills in the area of management, accounting, marketing, business communications, business math, etc. Because the students are "generalists," they have good marketability as employers are asking for cross-trained, flexible employees. Critical thinking skills that will be embedded in the curriculum can only add to employability. The General Business program continues to provide students with the flexibility they want to meet their own individual needs while making them marketable. Our department's image of providing quality instructors is maintained!

D. Identify any potential continuing education classes (night classes).

As the need and demand warrants, general business classes are already being offered at night school. Within the past 2 years, there has been strong interest in the paralegal program which increases some general business classes. Introduction to International Business could be added to our night school offering, assuming demand and adequate budget. As appropriate, seminars on a variety of general business topics can be scheduled. Students are also interested in transferring business credit classes to four-year schools (i.e., Business Statistics, Business Law).

Department Chair Sharon Niblock Date 12/7/88

Assistant Dean Barry Kiel Date 12-7-88

VI. THREE YEAR PROGRAM PLANNING GUIDE

BASED UPON PROGRAM CHANGES, EQUIPMENT, AND RETRAINING NEEDS, OUTLINE THE PROGRAM OBJECTIVES FOR THE FOLLOWING THREE YEARS. PRIORITIZE AS NECESSARY.

1988 - 89

1. Add Marketing as a required class in the program.
2. Strongly suggest that students take Introduction to International Business as a course offering.
3. Get the word out that students need to "analyze" their general business area of interest so on resumes or at interviews they can state their area of emphasis.
4. Keep abreast of critical thinking task force progress.
5. Ongoing updating for Department of Business and Management faculty.
6. Maintain and improve program quality instruction.
7. Maintain an active, interested advisory committee.

1989 - 90

1. Determine how critical thinking skills can be embedded into curriculum; begin implementation.
2. After needs assessment, analysis, etc., offer general business night classes that meet student needs for degrees on job upgrading.
3. Explore the possibility of adding additional courses or seminars in the international business area.
4. Continuous updating of faculty.
5. As faculty within the department retire, make sure that remaining faculty are "qualified" to teach designated classes.
6. Use advisory committee members effectively.

1990 - 91

1. Critical thinking skills embedded in curriculum;
   begin evaluation to determine effectiveness.
2. Continue to schedule general business classes -both day and night - to meet student demand for degrees, retraining, and upgrading.
3. Continue to broaden faculty knowledge and qualification.
4. Continue to use advisory committee members effectively; check years served to ensure "new ideas."
5. Evaluate quality of instruction making sure it is current and relevant to local business needs.

NORTHWEST CONFERENCE ON COMPETENCY BASED VOCATIONAL ED. 1989

INSTRUCTIONAL TECHNIQUES SESSION

The attached material will be used by Peter Mahr to illustrate how an intermediate metals cluster at Franklin HS in Portland Oregon is taught using the competency approach.

Presentation format:

- Introduce myself
  - name
  - work background
  - teaching background

- Philosophy of teaching
  - process vs product
  - competencies
  - teaching load

- Developing the Program
  - Course goals-objectives
  - Course outline
  - Competencies
    - Performance vs knowledge
  - Sequence of instruction
    - Timeline
  - Grading system
    - Spreadsheet
  - Sample lecture

- Discussion and questions

For further questions or materials contact:

Peter Mahr/Franklin HS
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Portland, OR 97206
503-280-5140 x 437

PROGRAM GOALS, FRANKLIN HIGH SCHOOL METALS PROGRAM
Revised 9-12-88

1. The student has vocational skills and knowledge needed for job entry, advanced training or avocational pursuits.

2. The student is able to use communication and interpersonal skills needed for gaining and retaining employment.

3. The student knows characteristics and requirements of careers within the metals area.

4. The student is able to select and identify the use and care for tools and equipment applicable to the metals area.

5. The student is aware of, and practices, safe work habits and techniques.

6. The student is able to work cooperatively and productively with fellow employees of either sex, of diverse cultural backgrounds, and/or those with handicapping conditions.

7. The student knows job search techniques applicable to his or her chosen vocational area.

8. The student knows and practices standards of ethical conduct in his/her vocational field.

9. The student has knowledge of employee-employer expectations and practices on the job, and of the interrelations of labor and management organizations.

10. The student knows his/her legal rights and responsibilities in the workplace.

11. The student knows that the quality and quantity of work produced are directly related to his/her individual and societal economic well-being.

12. The student knows how dignity, self-respect and the respect of others can be (are) achieved in his/her vocational area.

COURSE OUTLINE, INTERMEDIATE METALS CLUSTER, FRANKLIN H.S. 9-10-88
Peter Mahr, Instructor

GENERAL
- Shop orientation
- Safety
- First aid
- Using the machinerys handbook and other charts and manuals
- Use shop related computer programs

AUTOBODY
- Metal work
    - Porta power, hammer and dolly, slide hammer
- Body filler and sanding
    - pneumatic sanding machines
- Priming and painting
    - Types of paint
    - Thinning and reducing
    - Masking and tack wiping
    - Using the spray gun
        - Adjustments
        - Procedures for lacquer
- Polishing and detailing

FOUNDRY
- Careers
- Sand - types and care
- Patterns - types
    - Match plate, split, coping down
- Cores - Making and use
- Melting metal
    - Safety
    - Using the furnace
    - Fluxing and degassing
- Making a mold
    - Procedure
- Cleaning a casting
- Casting defects identification

MACHINING
- Careers
    - Types of careers
        - Working conditions, pay and benefits, what they do.
- Apprenticeship
- Industrial organization
    - Management, foreman, unions, personnel dept.
- Planning a project
    - Reading a blueprint
    - Procedure list - estimating time + material
    - Bill of materials - cost accounting
- Layout
    - Tools and procedures
- Measuring
    - Micrometer, vernier caliper, screw pitch gage, dial indicator, surface gage
        - Proper use, reading, care, and maintenance.
    - Using machine dials to measure.
    - Tolerance - importance of
- Lathe work
    - Holding work
        - Collet chuck, 3 and 4 jaw chucks.

  - Grinding a tool bit.
  - Cutting speeds and feeds and depth of cut
    - Roughing vs finishing
  - Turn a dia. to +/- .005
  - Tapering using tapering attachment.
  - Cleaning and oiling
  - C.N.C. Programing a lathe
    - Writing program
    - Verify program
    - Cut part using program
- C.N.C. Milling machine
  - Hand operation
- Milling machine - vertical and horizontal
  - Types of cutters - endmills, flycutter, plain milling
    - Holding cutters
  - Holding work - vise, parallels, on the table.
  - Milling procedures
    - Climb vs conventional
    - Squaring up stock
    - Speeds and feeds
    - Cutting fluids
    - Boring
    - Indicating vise and or head
  - Using Digital Read Out (DRO) while machining.
  - Machine cleaning and maintenance
- Drillpress work
  - Pulleys - speed ratios - feed
  - Holding work - vise, angle plate, V blocks.
  - Twist drills
    - Carbon vs HSS
    - Grinding drills
    - Types
  - Operations - drilling, reaming, countersinking, spot facing, counterboring
  - Coolant for different materials.
- Heat treating
  - Hardening, case hardening, annealing, normalizing
  - Hardness testing
    - Rockwell, file, spark
- Grinding
  - Grinding wheels - safety, types.
    - Dressing and truing
  - Surface grinder operation (manual)
- Bandsaws - Horizontal and vertical
  - Blades - selecting, contour cutting, safety
- Bend metal using hydraulic press.

SHEETMETAL

- Careers
- Measuring
  - Tools and procedures
- Layout
  - Box type, Parallel line, radial line,
  - Tools and procedures
  - Pattern use
  - Allowances for bends, seams and hems.
- Materials
  - Types, gages, standard sizes
  - Figuring costs
- Common Tools and Machines
  - Squaring shear, bar folder, slip rolls, punches, brake,

- corner notcher, spot welder, turning machines, stakes
    - Safe and proper use, adjustments and maintenance.
- Seams and Hems
  - Grooved lock, pittsburgh lock, wire edge, dovetail, S and D clips
    - How made, common uses, allowances
- Soldering
  - Heat sources- coppers and irons
  - Types of solders- soft, brazing
  - Procedures
- Fasteners
  - Rivets - pop, tinners, standard
  - Screws - self taping, machine,

WELDING

- Careers - Types, pay and benefits, working conditions, certification
- Electric welding theory
  - Polarity, grounding, current
- Welding layout, terminology
  - Layout tools and procedures
- Weld testing - guided bend test, acid etch
- Stick electrode welding
  - Safety
  - Machine setup
  - Rod selection, machine adjustments
  - Joints - butt, fillet, corner, lap, tacking, pipe
  - Out of position welding - horizontal and vertical
  - Thick metal preparation
  - Welding problems - solutions
- MIG Welding
  - Theory of operation
  - Machine setup
  - Welding procedures (short arc)
- Oxyacetylene welding
  - Safety
  - Equipment setup
  - Welding procedures
  - Joints - fillet, butt, unequal thickness, vertical, horizontal
- Oxyacetylene cutting, hand and machine.
  - Equipment setup
  - Procedures
  - Problem solving
- Brazing
  - Procedures
- Metallurgy
  - Types of metals, ferrous and nonferrous
    - Properties - ductility, tensile strength, malleability, hardenability
    - Metal Identification
      - Numbering system, color code
- Finishing welds
  - Slag removal, grinding
- Jigs and fixtures-work holding, warpage control.
- Hydraulic ironworker - shearing, punching and bending.
- Universal metal bender - bend pipe, flat stock, etc.

INTERMEDIATE METALS CLUSTER COMPETENCIES for:____________________

GENERAL

G1. Fill out a project planning sheet including a sketch, bill of materials, and work sequence. $7.00

G2. Complete an approved computer program relating to metal shop. $7.00

AUTOBODY - Preparation

AP1. Use hammers and dollies to straighten bent metal. $6.00

AP2. Straighten metal by:
  Use a porta-power to straighten damaged metal. $6.00
  Use a slide hammer to remove dents. $6.00
  Demonstrate how to use pull rods to work out a dent. $6.00

AP3. Mix and apply body filler. $6.00

AP4. Use a cheese grater to smooth body filler. $6.00

AP5. Use pneumatic sanding and grinding machines safely and properly. $6.00

AP6. Double mask an object to be painted to prevent overspray. $5.50

Spray Paint

ASP1. Mix and spray primer surfacer. $6.00

ASP2. Clean a spray gun to the instructors satisfaction. $6.00

ASP3. Properly thin and spray a lacquer top coat. $6.00

ASP4. Apply glazing putty to repair a minor dent. $6.00

FOUNDRY

FM1. Ram up and pour a pattern on which you must cope down the parting line. $6.00

FM2. Use a match plate pattern to produce a casting. $6.00

FM3. Ram up a split pattern. $6.00

FM4. Ram up your own pattern. $6.00

FM5. Make a CO2 core using core sand, sodium silicate, a core box, and gassing equipment. $6.00

FM6. Ram up and pour a green sand mold utilizing a CO2 core. $6.00

FM7. Demonstrate how to flux and degass a melt. $6.00

FM8. Clean up and finish machine a foundry casting. $6.00

MACHINING - General

MG1. Heattreat metal. $7.00

MG2. Hardness test metal with Rockwell hardness tester.$7.00

MG3. Use steel stamps to mark metal. $7.00

MG4. Install a wooden handle in a hammer head securing it correctly.$7.00

MG5. Layout metal using a surface gage and a vernier height gage.$7.00

MHP1. Bend metal with hydraulic press. $7.00

Lathe

ML10. Grind a lathe toolbit with the correct rake and clearance angles. $7.00

ML9. Turn stock to a given diameter to a tolerance of + or - .005. $7.00

ML13. Layout a length using layout dye and hermaphrodite caliper on the lathe and turn a square shoulder at this layout line. $7.00

ML7. Install and take apart a collet holder, collet, and collet draw bar in a lathe. $7.00

ML11. Turn a taper using the taper attachment. $7.00

Milling machine

MM1. Identify a sharp endmill and install and remove it correctly in the milling machine spindle. $7.00

MM2. Change speeds on the milling machine to achieve proper RPM for cutter and material being cut. $7.00

MM3. Use hold down clamps and step blocks or a vise to mill a piece of steel. $7.00

MM4. Mount and true a vise with a dial indicator to + or - .005. $7.00

MM5. Describe and follow the proper sequence in milling a rough block square using a vise and parallels. $7.00

Surface grinder.

MSG2. Dress the wheel on the surface grinder and explain the importance of this action. $7.00

MSG1. Demonstrate how to mount work on a surface grinder magnetic chuck and demonstrate safe manual surface grinding procedures. $7.00

MD6. Use a drill motor and twist drills to drill holes. $7.00

CNC Lathe and Mill

MNC1. Write a simple NC lathe program. $7.00

MNC2. Verify program on computer. $7.00

MNC3. Make a part using your verified program. $7.00

MNC3. Machine metal on the CNC milling machine using hand operation.$7.00

MCN5. Machine metal on the CNC milling machine using a program. $7.00

SHEETMETAL

SL2. Draw a radial line development on paper and transfer it to metal. $9.00

SL3. Draw a Parallel line development. $9.00

SL4. Layout a square elbow on paper. $9.00

Sheetmetal fabrication:

SF12. Fabricate a funnel. $9.00

SF13. Make a wired edge using a rotary machine. $9.00

SF3. Fabricate a 1/4 inch grooved lock. $9.00

SF15. Solder a seam with a soldering copper to make it leak proof. $9.00

SF20. Fabricate a Round tee duct fitting. $9.00

SF14. Make a dovetail lock and use it to connect duct parts. $9.00

SF4. Use slip rolls to form metal round. $9.00

SF19. Fabricate a Square elbow. $9.00

SF5. Make a pittsburgh lock on a sheetmetal duct fitting. $9.00

SF6. Form S+D clips to connect duct sections together. $9.00

SF16. Use rivets to fasten sheetmetal together. $9.00

SF16.5. Use pop rivets to fasten sheetmetal together. $9.00

WELDING - General

WG1. Use a handgrinder to grind metal. $6.00

WG2. Use the universal bender to bend metal. $6.00

WG4. Demonstrate how to safely operate the hydraulic ironworker. $6.00

WG5. Braze weld two pieces of metal together. $6.00

Oxyacetylene welding:

WO6. Weld a 3 inch fillet weld in the flat position. $6.00

WO7. Weld a 3 inch unequal thickness weld in the flat position. $6.00

WO8. Weld a vertical butt joint at least 3" long. $6.00

WO9. Weld a Horizontal butt joint at least 3" long. $6.00

Flame cutting machine

WOCM2. Adjust flame and cutting speed, operate motor switch and clutch and make an acceptable cut with the flame cutting machine. $6.00

Stick electrode arc welding

WS3. Stick weld a 3 inch long fillet weld in the flat position. $6.00

WS4. Stick weld a 3 inch long stringer weld in the horizontal pos. $6.00

WS5. Stick weld a 3 inch long butt weld in the horizontal position. $6/00

WS6. Stick weld a 3 inch long stringer bead in the vertical pos. $6.00

WS7. Stick weld a 3 inch long butt weld in the vertical position. $6.00

MIG welding:

WM2. MIG weld (short arc) a 3 inch fillet in the flat position with short arc. $6.00

TIG Welding:

WT2. Make a 3 inch butt TIG weld on steel. $6.00

INTERMEDIATE METALS UNITS AND PROJECTS

Franklin High School
Revised 9-10-88

First Quarter:	2 weeks	4 weeks		3 weeks	2 days
	Review gas butt weld arc butt weld foundry casting sheetmetal box or dustpan machining exer.	Machining ballpeen hammer (heattreat, dia, handle, sholder, collet, taper, bit) NC-mill-hand op	MIDTER	Gas/Arc welding gas + arc fillet unequal thickness hand cutting torch stick stringer HP stick stringer VP	Final notebook

Second Quarter:	3 Weeks	3 weeks		2 weeks	1 week
	Autobody metal work filler+sanding lacquer prime	Sheetmetal square elbow (S+D clips) funnel (groved lock,wire edge, solder) round tee (slip rolls, dovetail)	MIDTERM	Foundry own casting with machining lathe or mill cope down flux + degass	Applied Final Notebook

Third Quarter:	4 weeks	2 weeks		3 weeks	2 days
	Machining c-clamp (S-stamp,layout ind.vice,square surface grind) CNC lathe (program+part)	Sheetmetal square elbow (S+D clip, pittsbrg lok, dove tail)	MIDTERM	Welding MIG fillet FP TIG butt FP flame cutting mach. gas butt VP gas butt HP	Final Notebook

Fourth Quarter:	3 weeks	2 weeks		2 weeks	1 weeks	1 week
	Machining N.C.lathe (program, part)	Autobody paint lac.	MIDTERM	Foundry cores matchplate	Welding brazing stick butt (HP + VP)	Applied final Notebook

INTERMEDIATE METALS

COMPETENCY BASED, MONEY GRADING SYSTEM, FRANKLIN METAL SHOP
Revised 9-10-88

Your grade in this class is based upon how much money you earn.

Money is earned by: 1. Completing a competency. 2. Earning a bonus. 3. Taking tests and quizzes. 4. A notebook and clean-up.

Money amounts for competencies are as follows:

	Beginning	Intermediate	Advanced
Autobody	$4.00	$6.00	$11.00
Foundry	$4.00	$6.00	$11.00
Machinist	$5.00	$7.00	$13.00
Sheetmetal	$6.00	$9.00	$17.00
Welder	$4.00	$6.00	$12.00

Bonus examples: VICA club membership $10.00/qtr
Contests conferences, or activities $15.00-$50.00
Perfect attendance for qtr. $15.00
Other $5.00-100.00

All paid work in the shop must be accompanied by a plan sheet, contract, or work order signed by the instructor before work is started.

To earn a competency you must be directly observed by the instructor or some-one approved by the instructor. (Practice on your own).

Tests will allow you to earn competencies that are not shop based.
Safety test $25.00, Midterm $50.00, Final $100.00, other quizzes $5.00-20.00

You will recieve $1.00 for each day you have a passing grade on your clean-up job.

Grades are calculated as follows:

Your final grade for the quarter is the average of the three categories listed below:

1. The percentage of required competencies you complete.

2. The average percentage of all tests you take.

3. The average of your notebook and clean-up percentages.

INTERMEDIATE METALS SPREAD-SHEET STUDENT	CODE	GENERAL Plan Sheet G1 $7.00	CompProg G2 $7.00	AUTOBODY Ham+Doll AP1 $6.00	Straight metal AP2 $6.00	BodyFill AP3 $6.00	ChesGrtr AP4 $6.00	SandMach AP5 $6.00	Mask AP6 $6.00	Spray Paint PrimSurf ASP1 $6.00	CleanGun ASP2 $6.00
Scuffer											
Mr. X.											
ARE WE HAVING FUN?											
None 1											
None 2											
* C + G *											

Lacquer ASP3 $6.00	GlazPuty ASP4 $6.00	FOUNDRY Molding CopeDown FM1 $6.00	MatchPlt FM2 $6.00	Split Pn FM3 $6.00	OwnPatrn FM4 $6.00	MakeCore FM5 $6.00	PourCore FM6 $6.00	Flx&Degs FM7 $6.00	MachCast FM8 $6.00	MACHINING General HeatTreat MG1 $7.00	HardTest MG2 $7.00

StlStamp MG3 $7.00	FixHandl MG4 $6.00	Layout MG5 $6.00	HydPress Bend HP1 $7.00	Lathe GrindBit ML10 $7.00	Diam.005 ML9 $7.00	Shoulder ML13 $7.00	Collet ML7 $7.00	TaperAtt ML11 $7.00	Milling-Vertical ChngEndM MM1 $7.00	ChangSpd MM2 $7.00	Mill MM3 $7.00

Ind.Vise MM4 $7.00	Square MM5 $7.00	Surface Grinder Dress MSG2 $7.00	Grinding MSG3 $7.00	Drilling DrilMotr MD6 $7.00	Numerical Control Program MNC1 $7.00	Verify MNC2 $7.00	Lathe Part MNC3 $7.00	NC Mill Hand Op MCN4 $7.00	Program MCN5 $7.00	SHEETMETAL Layout Radial SL2 $9.00	Parallel SL3 $9.00

SqrElbow SL4 $9.00	Fabrication Funnel SF12 $9.00	WireEdge SF13 $9.00	GrvdLock SF3 $9.00	Solder SF15 $9.00	RoundTee SF20 $9.00	Dovetail SF14 $9.00	SlipRols SF4 $9.00	SqrElbow SF19 $9.00	PitbrgLk SF5 $9.00	S&D clip SF6 $9.00	Rivets SF16 $9.00

PopRivet SF16.5 $9.00	WELDING General HandGrnd WG1 $6.00	Bender WG2 $6.00	IronWkr WG4 $6.00	brazing WG5 $6.00	Oxyacetylene FilletFP WO6 $6.00	UneqThick WO7 $6.00	ButtVert WO8 $6.00	ButtHori WO9 $6.00	Flame Cutting Machine $6.00	Stick weld FilletFP WS3 $6.00	StringHP WS4 $6.00

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                                              Shop     Percent  Rules
                           MIG      TIG      Competen of       and      Misc.
Butt HP  StringVP Butt VP  FilletFP Butt FP  Earned   Required Procedur Quizes   Safety   Midterm  Final
WS5      WS6      WS7      WM2      WT2      Total    Compete           Test     Qtr.1.   Qtr. 1
$6.00    $6.00    $6.00    $6.00    $6.00                                        $25.00   $50.00   $100.00
------------------------------------------------------------------------------------------------------------

                                                       Test     Test
                                                      Totals   Percent
Midterm  Semester Midterm  Qtr. 3   Qtr.4.   Semester                           Notebook Notebook Notebook Notebook
Qtr.2.   Appl.Fin Qtr.3.   Final    Midterm  Appl.Fin                           Qtr. 1   Qtr. 2   Qtr. 3   Qtr. 4
$50.00   $100.00  $50.00   $100.00  $50.00   $100.00                            $50.00   $50.00   $50.00   $50.00
------------------------------------------------------------------------------------------------------------

                                     Notebook Notebook                           Percent           Percent
                                    and      and               Total    for      Total    for      Total
Cleanup  Cleanup  Cleanup  Cleanup  Cleanup  Cleanup  Bonus    Earnings Grade    Earnings Grade    Earnings
Qtr.1.   Qtr.2.   Qtr.3.   Qtr.4.   Totals   PerCent  any      Qtr. 1.  Qtr.1.   Qtr. 2   Qtr.2.   Qtr. 3
                                                      amount
------------------------------------------------------------------------------------------------------------

 Percent           Percent    Grand      Money
for      Total    for        Total      Owed
Grade    Earnings Grade      for        to
Qtr.3.   Qtr.4.   Qtr.4.     Year
                                        Shop     Amount:  For:     Amount:  For:     Amount:  For:     Amou
----------------------------------------=========-----------------------------------------------------------
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READING A MICROMETER AND TURNING A SHAFT TO A SIZE

Measuring in this shop can be done either with a __________ graduated in 16ths, or a _____________ graduated in thousandths (.001).

Tolerance is the limit within which your work will be acceptable.

Tolerance for fractional dimensions:

Tolerance for decimal dimensions:

MICROMETERS:

Parts of:

Cost:

Care:

Holding:

How you can get one to use:

Reading a micrometer:

PROCEDURE FOR TURNING A SHAFT TO A GIVEN SIZE:

1.

2.

3.

4.

5.

6.

14

INTRODUCTION TO
CBVE

RON MEHRER
CURRICULUM SPECIALIST
NORTH DAKOTA STATE BOARD
FOR VOCATIONAL EDUCATION

NWCBVE
CONFERENCE
OCT 18-20, 1989

BEND, OREGON

COMPETENCY-BASED VOCATIONAL EDUCATION

A WORKING DEFINITION

A vocational education program is considered to be competency-based when it meets the following standards:

1. The program fully satisfies the criteria included in two essential categories (i.e., program competencies, and competency assessment).
2. The program exhibits most of the characteristics listed in two facilitating categories (i.e., instructional procedures, and administrative procedures).

The categories and indicators of each category are listed below.

ESSENTIAL CATEGORIES

PROGRAM COMPETENCIES: The competencies that students are expected to achieve are:

1. derived from a rigorous analysis of the occupation,
2. verified by a committee of competent practitioners or their immediate supervisors (when they exist),
3. stated in terms of tasks performed by incumbent practitioners,
4. known by the student in advance of instruction.

COMPETENCY ASSESSMENT: Student mastery of the stated competencies is assessed so that:

1. students are required to perform tasks in a manner similar to those performed by incumbents in the occupation,
2. each student is individually assessed on each competency or cluster of competencies,
3. Related cognitive knowledge and desired attitudes are integral parts of competency assessment,
4. standards used in assessment are those expected of those entering that level of work, not other students,
5. criteria used in assessment are known by the student, in advance of assessment.

FACILITATING CATEGORIES

INSTRUCTIONAL PROCEDURES: The instruction is designed so that:

1. instructional materials are keyed to competencies,
2. environments that duplicate or simulate the work place are available to students during competency development,
3. basic knowledge or background theory is learned as it is needed to support competency development,
4. each student is given continuous and detailed feedback on competency development,
5. a variety of learning styles and teaching strategies are provided for,
6. students with appropriate prerequisite skills and knowledge may bypass instruction on competencies already mastered,
7. students can progress through the program at different rates.

ADMINISTRATIVE PROCEDURES: The program is organized and supported so that:

1. program completion is based on satisfactory mastery of all competencies.
2. students can enter and exit the program at different times,
3. individual student records are maintained and reflect student progress at a given point in time,
4. materials, space, and equipment are available when needed by students and instructors,
5. the record-keeping system permits student transfer into and out of the program without requiring duplication of instruction on mastered competencies,
6. a requirement of a number of hours of instruction is removed from the criteria for program completion,
7. records of competency mastery are provided to students and prospective employers,
8. student grades, if used, reflect the level of achievement within competency mastery; in some programs, speed of learning may also be an appropriate factor in grading,
9. credit, if awarded, is given for competencies achieved as a result of instruction and for previously mastered competencies,
10. student fees are individually assessed and are based on the time actually spent in the program and instructional resources used.

WHAT IS COMPETENCY-BASED VOCATIONAL EDUCATION?

Competency-based vocational education (CBVE) is an instructional process aimed at improving the teaching-learning process. CBVE can also be called competency-based education or instruction, performance-based education or instruction, criterion-referenced instruction, mastery learning, or proficiency-based education. Basically, these terms all have the same meaning. By definition, CBVE refers to occupational programs in which required behaviors (competencies) and performance standards are specified in advance of instruction.

A competency is defined as the ability (including knowledges, skills, and/or attitudes) to perform a specific task successfully to meet a specified performance standard. A competency statement contains an action verb and a noun (i.e., fill out a job application).

The basic intent of CBVE is to aid student achievement of required behaviors or competencies needed for successful on-the-job performance. Several aspects of CBVE distinguish it from traditional instruction. These include:

1. Analysis of the subject matter content is in terms of performance competencies.
2. Diagnosis of pre-instructional student behaviors (pre-testing).
3. More use of individualized instructional strategies.
4. Use of criterion-referenced measurement instruments for assessing performance tasks.

A competency-based instructional system is based on the concept that no two people learn the same way at the same rate. To the students, CBVE means:

1. Being given credit for what they already know.
2. Being able to identify what they need to know or do.
3. Being able to proceed at their own rate within program guidelines.
4. Having some choice in how they learn--individually, on a one-to-one basis, in small groups, in large groups, or through audiovisual means.
5. Accepting more responsibility for their own learning.
6. Being given more responsibility in decision making and time management.

7. Evaluating their own progress accurately.

8. Being able to move more freely in the classroom and/or the shop.

9. Having a performance-based curriculum which requires demonstrating mastery learning at the level of performance designated by workers in the occupation.

10. Competing against pre-set standards and not other students; and being graded on achievement of standards or criteria for each segment of the curriculum.

For the teacher, CBVE means:

1. Being a manager of learning, a consultant rather than a "giver-of-all-information," a facilitator of the learning process.

2. Being a motivator, concentrating on instilling confidence in the learner, providing rewards for jobs well done, and on serving as a model of desirable work habits, attitudes, and competency in the occupational field.

3. Having the responsibility of advising a group of students, and being a part in designing each student's personalized program of study.

4. Being responsible and accountable, along with the student, for the curriculum.

5. The key element in the teaching-learning process.

Characteristics of a CBVE Program

A CBVE program can be identified by examining its characteristics. The following paragraphs explain the major characteristics. It should be pointed out, however, that a program probably would not have all of these characteristics, but may have modifications of them.

1. Course content is based upon actual worker's tasks which are measurable. Competencies to be learned by the students are determined in advance of instruction through a job or task analysis. The job analysis focuses upon the job duties and tasks involved in work activity. The purpose of a job analysis is to find out what workers are doing on the job.

2. Student performance objectives are specified in advance of instruction. Job competencies are expressed in terms of student performance objectives. Performance objectives focus on student outcomes or what the individual will be able to do upon successful completion of instruction. A performance objective consists of three components: (1) a student's performance or behavior stated in observable and measurable

terms; (2) a description of the conditions and limitations under which the student is expected to perform a task; and (3) a precise description of the acceptable performance standard or criterion. Students are made aware of the objectives they must achieve which eliminates guesswork for both students and teacher.

3. Student achievement is based upon demonstrated competency. Performance of skills is of prime importance in CBVE. Emphasis is placed on the development of minimal levels of competency by all or many students, thus promoting the acquisition of marketable job skills. However, opportunities should be provided for and students encouraged to develop their abilities beyond the minimal performance standard so that individual abilities can be developed to their fullest.

4. Instruction is individualized. Opportunity is provided for differences among students with respect to the objectives they pursue at a given time, the mode or methods of instruction, and the materials used for learning. Instruction can be self-paced, with the student having some choice in the selection of objectives and learning activities under the guidance of the teacher. Learning activities may involve the use of student competency sheets, learning activity packages, group projects, independent study, on-the-job training, and simulations.

5. The student and teacher are more accountable for performance of competencies. The student, as well as the teacher, can be more accountable for his or her performance in a CBVE program as compared with a traditional program. The individual knows what he or she is expected to demonstrate and must accept the responsibility, along with the teacher, for meeting the identified performance standards. In doing so, the student is encouraged to assume more responsibility for the instructional process since the completion of the program is dependent on the demonstration of specified competencies.

6. Learning is guided by feedback. Feedback plays an important part in a CBVE program. Frequent or immediate feedback is provided to the student. The student's progress is monitored closely in relation to the stated objectives in order to provide reinforcement and motivation for learning, in addition to diagnosing any student deficiencies so that remedial instruction can be provided.

7. Learning time is flexible. Time may vary among students to accomplish the objectives. Thus, slower students are permitted to take enough time, and faster ones can proceed to advanced units.

8. An open entry/open exit program is possible. The concept of an open entry/open exit program is possible in CBVE. When a student has achieved the required competencies, the individual should receive credit for the work and move on to advanced

training or the job market. Many entry and exit points throughout the training program may exist, reflecting different job and skill levels within an occupation. The concept of open entry/open exit, however, is difficult to handle administratively due to the present scheduling in today's schools.

9. Criterion-referenced measurement is employed to evaluate the attainment of the performance objectives. A criterion-referenced test (CRT) or measure is one that is constructed to yield measurements which are directly interpretable in terms of specified performance standards. A student is evaluated according to predetermined performance standards rather than by a comparison with other students. A CRT is performance-oriented; that is, it measures if an individual can perform a job task or work sample under controlled conditions. This type of performance test usually, but not always, involves the manipulation of equipment, materials, and objects. Since every student progresses as an individual, failure or pressure is minimized.

10. The teacher is a manager and facilitator of instruction. The teacher's and student's roles in a CBVE program are different than in a traditional program. The teacher is more of a manager, facilitator, and motivator in the instructional process. The teacher and student actually become more involved with the teaching-learning process.

ADVANTAGES, MISCONCEPTIONS, AND CONCERNS OF CBVE

Advantages of CBVE

As an instructional approach to increase student learning and occupational success, CBVE has certain advantages:

1. The student knows in advance of instruction exactly what he or she must do and how well. Performance objectives are used for this purpose.

2. The use of a variety of learning activities will keep students more motivated than just the traditional textbook and lecture/discussion/demonstration approach. Students like CBVE programs better than traditional programs.

3. A modular instructional approach allows both students and teachers a greater degree of freedom and flexibility. The teacher becomes more of a manager and facilitator of learning.

4. Programs can be individually designed to accommodate student differences in learning styles, interests, and abilities. With individualized instruction, the student is given the opportunity to achieve a level of occupational competency while working at his or her own rate.

5. Programs are more accountable to taxpayers, students, and employers because they are based on specific competencies.

Misconceptions and Concerns of CBVE

Even though CBVE is certainly not the answer to all educational problems, many criticisms and doubts about CBVE are based on simple misunderstandings. The following information outlines some of the common complaints about CBVE.

1. With so much emphasis on individualized instruction, each student is isolated in the instructional process. Rather than causing isolation, CBVE presents more opportunity to interact with other students and the teacher (through one-to-one situations and small-group settings) than does the conventionally-structured classroom.

2. CBVE is dehumanizing. Instruction which is not competency-based is often more dehumanizing. When students are taught as a group in a traditional program, their individual needs as persons often cannot be met. Conventional grading systems encourage students to compete against one another, making slower students feel inadequate and falling further behind. Sometimes even the most able students are held back from achieving their full potential in group-oriented instruction.

Individualized instruction in CBVE considers each student's needs and goals, provides more time and assistance which is necessary to achieve success, and minimizes feelings of failure and frustration.

3. CBVE forces all students into the same mold. In a sense, everyone in a CBVE program becomes alike in that all students are required to achieve the same minimum competencies. But these competencies are the very ones workers say are required for success on the job. Beyond these basic and minimal skills and abilities, however, students may choose to specialize, develop particular job skills further, and study some topics in greater depth. Thus, once students advance beyond the entry-level requirements, they may choose where they want to go from there.

4. CBVE lowers standards because it allows too many people to get A's. Grades do tend to be higher in CBVE programs when compared to traditional programs. However, this is mainly because CBVE lets students know where they are going, thus improving their motivation and achievement. Many teachers maintain that standards are raised, not lowered. Objectives are specified in terms of performance and students are evaluated according to specific criteria. Furthermore, CBVE is more consistent with the sound philosophy of education that all students achieve according to their highest potential given the correct conditions.

5. You give away what will be on the test when you let students know the exact evaluative procedures and items in advance. You are just teaching the test. In CBVE, you do not teach in preparation for the test but for the skills the test will require. One principle of CBVE is that testing should not be a psychological game in which the students try to outguess the teacher. A student who knows exactly how to perform for success is more likely to learn and perform efficiently. Criterion-referenced measures encourage the teacher to pinpoint the essential learnings toward which to direct instruction. From the student's point of view, less time is wasted studying nonessential information. The student can evaluate personal progress toward the standards.

6. CBVE will not work in all program areas of vocational education. For some courses, to specify precisely student outcomes and to direct instruction toward the desired student performances is more difficult than others. Any course worth teaching, however, is also worth the effort to measure its success. To measure student learning, precise performances and standards of quality are needed. All vocational programs should have measurable competencies. Fortunately for vocational educators, most vocational-technical courses can be converted to competency-based instruction. V-TECS catalogs and other resource material go a long way toward helping to establish CBVE programs by eliminating a tremendous amount of groundwork which would otherwise have to be done by teachers.

7. CBVE calls for individualized instruction. One teacher cannot provide adequate supervision for students working on diverse learning tasks in a variety of locations, sometimes using dangerous equipment or materials. Wherever individualized programs have been tried, most students have adapted very quickly to a more independent learning style. There are many techniques to assist the teacher to individualized instruction. The more advanced and the more responsible students can assist the teacher by tutoring and supervising other students as they work independently or in small groups. In some situations, paraprofessionals or teacher aides may be employed to aid with supervision and recordkeeping. It should be pointed out, however, that CBVE programs will not be totally individualized. There will still be large-group and small-group activities in the classroom.

8. Teachers need completely new skills to teach using CBVE. Although some new teacher roles and skills may be required, teachers currently have most of the skills necessary to adopt the approach. All that is needed is time and training for the teachers to be comfortable with using CBVE. The proper attitude of the teacher is very important to make CBVE work.

9. CBVE is too academic and places too much emphasis on reading. Historically, reading has been a problem in education, especially with vocational education students. What better way for a person to improve their reading skills than through vocational education. Instructional materials should be at the appropriate reading level so as to make students want to read. Although non-reading methods of teaching can be employed in a CBVE program, it is better to assist students in the development of reading skills.

10. CBVE seems like a lot of paperwork for the teacher and students. Depending on what instructional materials a teacher uses, paperwork may be increased or decreased. However, CBVE will organize instruction so much better that it is worth the effort. Students themselves can help in the control of paperwork if the instructional program is well designed. Since student outcomes and learning activities are written, there is no confusion on what and how a student is to learn.

11. CBVE is just another name for minimal competency testing. Although testing is an important element of a CBVE program, the end result is not just being able to pass a test. The instructional process and being taught how to learn is just as important, if not more important, as showing that one possesses the skills, attitudes or knowledges of a work activity. CBVE is not just a series of tests, but a total instructional system.

12. CBVE is just another fad. Elements of CBVE have been around a long time. However, they have never been really implemented in the classroom. Job analysis, performance objectives, student competency sheets, individualized instruction, and other elements of a CBVE program will be around a long time to come. CBVE is not a revolutionary fad, but the results of good educational practices which have evolved throughout the years.

13. The teacher is eliminated from the teaching-learning process. The teacher is the key to any instructional process. CBVE does not eliminate the teacher, but his or her role is changed. As has been said, the teacher is more of a facilitator, motivator, and manager of instruction in CBVE. Actually, the teacher is more involved with student learning in a CBVE program.

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TO THE STUDENTS, CBVE MEANS:

1. Being given credit for what they already know.
2. Being able to identify what they need to know or do.
3. Being able to proceed at their own rate within program guidelines.
4. Having some choice in how they learn—individually on a one-to-one basis, in small groups, in large groups, or through audio visual means.
5. Accepting more responsibility for their own learning.
6. Being given more responsibility in decision-making and time management.
7. Evaluating their own progress accurately.
8. Being able to move more freely in the classroom and/or shop.
9. Having a performance-based curriculum which requires demonstrating mastery learning at the level of performance designated by workers in the occupation.
10. Competing against pre-set standards and not other students; and being graded on achievement of standards or criteria for each segment of the curriculum.

TO THE TEACHER, CBVE MEANS:

1. Being a manager of learning, a consultant rather than a "giver-of-all-information," a facilitator of the learning process.
2. Being a motivator, concentrating on instilling confidence in the learner, providing rewards for jobs well done, and on serving as a model of desirable work habits, attitudes, and competency in the occupational field.
3. Having the responsibility of advising a group of students, and being a part in designing each student's personalized program of study.
4. Being responsible and accountable, along with the student, for the curriculum.
5. Being able to give more intensive and personal attention to each student.
6. Accommodating all levels of student ability simultaneously.
7. Being the key element in the teaching-learning process.
8. More effective graduate placement is possible.

TO THE ADMINISTRATOR, CBVE MEANS:

1. The instructional staff can be used more efficiently.
2. The building and instructional equipment can be used more efficiently.
3. The evaluation of both program effectiveness and instructional staff is easier.
4. The placement of graduates in jobs is assisted.
5. Students with a wide range of entry-level skills including handicapped can be accepted.
6. The content for instruction is available 24 hours per day for part-day students.
7. More satisfaction is incurred due to the achievement of students and the ability to help many *more* students achieve mastery.
8. Articulating secondary, postsecondary, and part-time adult instruction is easier to accomplish.
9. Open entry/open exit accommodates retraining and updating educational needs in the community.
10. Opportunities to work cooperatively with business and industry are increased.
11. Educational accountability to the community is more easily demonstrated.

TO THE EMPLOYER, CBVE MEANS:

1. Having determined the skills of prospective employees.
2. Assurance of the qualifications of prospective employees.
3. Having a record of the prospective employee's skills in a handy format.
4. Retraining or updating employee's skills can take place quickly and easily.
5. Assurance that demand or anticipated demand of employees can be met.

NORTH DAKOTA
COMPETENCY-BASED
VOCATIONAL EDUCATION

STANDARDS
AND
CRITERIA

AN INSTRUMENT
TO MEASURE
IMPLEMENTATION

Competency-Based Vocational Education

A Cooperative Project of

NORTH DAKOTA STATE BOARD FOR VOCATIONAL EDUCATION
CARROL BURCHINAL, DIRECTOR

AND

BUSINESS AND VOCATIONAL EDUCATION, UNIVERSITY OF NORTH DAKOTA
JAMES L. NAVARA, CHAIRMAN

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STATEMENT OF INTENT BY THE NORTH DAKOTA STATE BOARD FOR VOCATIONAL EDUCATION

The North Dakota State Board for Vocational Education is charged with providing responsible leadership to maintain a thorough and efficient state program of vocational education. In partial fulfillment of this mission, the State Board is committed to promoting the adoption and implementation of Competency-Based Vocational Education (CBVE) programs in North Dakota schools.

Identifying the tasks of an occupation, setting standards for learner performance and evaluating performance are certainly not new to vocational education. What is new is the insistence on the use of validated competencies, systematic procedures for delivering instruction and more objective student assessment instruments. In combination, the principles of the competency-based approach constitute a dramatic change in vocational education which results in a significantly improved degree of certainty in certifying learner proficiency. In addition, educational resources can be applied more efficiently and learners can be prepared to achieve their career objectives with greater concern for their individual needs and aspirations.

ESSENTIAL ELEMENTS OF COMPETENCY-BASED VOCATIONAL EDUCATION PROGRAMS

CBVE is an instructional system based on occupational analysis and clearly stated performance objectives that lead to the development of competencies--knowledge, skill, attitude--that are deemed critical to successful employment in work environments.

The potential of CBVE cannot be reached by performing superficial modifications to programs and calling it CBVE. Although there is considerable latitude in implementing certain activities, essential elements have been identified that distinguish competency-based programs from others. The Standards and Criteria to Measure Standards which are included in the Assessment and Evaluation instrument are based on the best that is known about how people learn and how to maintain the validity of training for performance in the workplace.

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STANDARD #1	POOR	FAIR	GOOD	EXCELLENT
COMPETENCIES, INCLUDING STANDARDS OF PERFORMANCE, ARE BASED ON ACTUAL WORKERS' TASKS AND ARE IDENTIFIED AND STATED.	☐	☐	☐	☐

CRITERIA TO MEASURE STANDARD #1

	YES	NO	??
A. THERE IS A TASK/COMPETENCY LIST THAT HAS BEEN VALIDATED BY REPRESENTATIVES OF BUSINESS AND INDUSTRY FOR THE PROGRAM.	☐	☐	☐
B. THERE IS A PERFORMANCE OBJECTIVE FOR EACH VALIDATED TASK/COMPETENCY.	☐	☐	☐
C. PERFORMANCE OBJECTIVES IN THE COGNITIVE (KNOWLEDGE, "WHAT DO I KNOW") DOMAIN ARE INCLUDED IN THE PROGRAM.	☐	☐	☐
D. PERFORMANCE OBJECTIVES IN THE AFFECTIVE (ATTITUDE, "HOW DO I FEEL") DOMAIN ARE INCLUDED IN THE PROGRAM.	☐	☐	☐
E. PERFORMANCE OBJECTIVES IN THE PSYCHOMOTOR (SKILLS, "WHAT CAN I DO") DOMAIN ARE INCLUDED IN THE PROGRAM.	☐	☐	☐
F. PERFORMANCE OBJECTIVES ARE STATED IN MEASURABLE TERMS.	☐	☐	☐
G. TASK/COMPETENCY LISTS ARE UPDATED/REVALIDATED ANNUALLY BY LOCAL EXPERTS.	☐	☐	☐

COMMENTS FOR STANDARD #1:

STANDARD #2	POOR	FAIR	GOOD	EXCELLENT
COMPETENCIES TO BE MASTERED ARE SPECIFIED TO LEARNERS PRIOR TO INSTRUCTION.	☐	☐	☐	☐

CRITERIA TO MEASURE STANDARD #2

	YES	NO	??
A. A LIST OF TASKS/COMPETENCIES TO BE MASTERED IS PROVIDED TO THE LEARNER PRIOR TO INSTRUCTION IN THE PROGRAM, COURSE AND/OR UNIT OF INSTRUCTION.	☐	☐	☐
B. TASKS/COMPETENCIES ARE DERIVED FROM A VALIDATED TASK LIST.	☐	☐	☐

COMMENTS FOR STANDARD #2:

STANDARD #3	POOR	FAIR	GOOD	EXCELLENT
CRITERION-REFERENCED MEASURES ARE USED TO DETERMINE MASTERY OF COMPETENCIES.	☐	☐	☐	☐

CRITERIA TO MEASURE STANDARD #3

	YES	NO	??
A. THERE IS A CRITERION-REFERENCED MEASURE FOR EACH VALIDATED TASK/COMPETENCY.	☐	☐	☐
B. THE CRITERION-REFERENCED MEASURE TESTS MASTERY OF THE SKILL, KNOWLEDGE OR ATTITUDE AS STATED IN THE PERFORMANCE OBJECTIVE.	☐	☐	☐
C. THE CRITERION-REFERENCED MEASURE TESTING CONDITIONS ARE THE SAME AS STATED IN THE PERFORMANCE OBJECTIVES.	☐	☐	☐
D. LEARNERS ARE REQUIRED TO PERFORM TASKS IN A MANNER SIMILAR TO PERFORMANCE BY INCUMBENTS IN THE OCCUPATION FOR WHICH THE LEARNER IS RECEIVING TRAINING.	☐	☐	☐
E. LEARNER ACHIEVEMENT AND PERFORMANCE IS BASED ON THE CRITERION/STANDARD RATHER THAN COMPARISON WITH THE PERFORMANCE OF OTHER LEARNERS.	☐	☐	☐

COMMENTS FOR STANDARD #3:

STANDARD #4	POOR	FAIR	GOOD	EXCELLENT
A SYSTEM EXISTS FOR DOCUMENTING COMPETENCIES MASTERED BY THE LEARNER.	☐	☐	☐	☐

CRITERIA TO MEASURE STANDARD #4	YES	NO	??
A. THERE IS A DOCUMENTATION SYSTEM FOR TRACKING LEARNER MASTERY OF TASKS/ COMPETENCIES IN THE PROGRAM, COURSE OR UNIT.	☐	☐	☐
B. THE DOCUMENTATION INCLUDES THE LEARNER'S NAME.	☐	☐	☐
C. THE DOCUMENTATION INCLUDES THE PROGRAM TITLE.	☐	☐	☐
D. THE DOCUMENTATION INCLUDES THE LIST OF TASKS/COMPETENCIES MASTERED.	☐	☐	☐
E. THE DOCUMENTATION INCLUDES THE DATE OF DEMONSTRATED MASTERY.	☐	☐	☐
F. THE DOCUMENTATION INCLUDES THE RATING SCALE OR CHECKLIST FOR EACH MASTERED TASK/COMPETENCY.	☐	☐	☐
G. THE DOCUMENTATION IS USED FOR ARTICULATION, ACHIEVEMENT RECORDS, EMPLOYER INFORMATION, AND REPORTS TO PARENTS.	☐	☐	☐
H. A DOCUMENT LISTING TASKS/COMPETENCIES MASTERED IS PROVIDED TO EACH LEARNER UPON EXITING THE PROGRAM.	☐	☐	☐

COMMENTS FOR STANDARD #4:

STANDARD #5

	POOR	FAIR	GOOD	EXCELLENT
THE INSTRUCTIONAL DELIVERY SYSTEM IS STRUCTURED TO PROVIDE FOR DIFFERENCES IN LEARNER CHARACTERISTICS AND ABILITIES.	☐	☐	☐	☐

CRITERIA TO MEASURE STANDARD #5

	YES	NO	??
A. INSTRUCTIONAL MATERIALS ARE KEYED TO THE TASKS/COMPETENCIES	☐	☐	☐
B. THERE IS PROVISION FOR INDIVIDUALIZED LEARNING OPPORTUNITIES AND ENRICHMENT ACTIVITIES FOR EACH LEARNER AS EVIDENCED BY THE USE OF LEARNING MODULES, ASSIGNMENT SHEETS AND/OR LEARNING ACTIVITY PACKETS.	☐	☐	☐
C. THERE IS PROVISION FOR IMMEDIATE FEEDBACK/CORRECTION STRATEGIES.	☐	☐	☐
D. A VARIETY OF LEARNING ACTIVITIES AND RESOURCES ARE UTILIZED.	☐	☐	☐
E. THERE IS PROVISION TO ALLOW LEARNERS TO PROCEED AT THEIR OWN RATE.	☐	☐	☐
F. LEARNERS ARE REQUIRED TO DEMONSTRATE MASTERY OF EACH TASK/COMPETENCY.	☐	☐	☐
G. EXIT STANDARDS, RATHER THAN ENTRANCE STANDARDS, ARE EMPHASIZED.	☐	☐	☐
H. ENTRANCE PROCEDURES ALLOW LEARNERS TO PROVIDE EVIDENCE OF PREVIOUSLY ACHIEVED COMPETENCE.	☐	☐	☐
I. A SYSTEM IS IN PLACE TO ALLOW LEARNERS TO BYPASS INSTRUCTION BY DEMONSTRATING PRIOR MASTERY OF TASKS/COMPETENCIES ASSOCIATED WITH THAT INSTRUCTION.	☐	☐	☐
J. A SYSTEM TO CONVERT PERFORMANCE OF OBJECTIVES TO A CONVENTIONAL GRADING SCALE IS IN PLACE AND KNOWN TO THE LEARNERS.	☐	☐	☐

COMMENTS FOR STANDARD #5:

ORIENTATION TO APPLIED SUBJECTS

All About Applied Academics...

What Every Parent Should Know...

In response to reports like ***A Nation at Risk***, which studied education in the United States, state education agencies banded together in consortia to direct the creation of four new "basic" courses. These four courses teach by allowing students to do. Furthermore, the courses highlight practical information that's relevant to the world of work.

Taken together while the student is still in high school, these four courses will comprise the base of knowledge that students will need to enter community college/technical school postsecondary training or to embark upon a variety of technical occupations. These exciting new job opportunities will offer careers that are critical to our nation's economic development. Employees will be needed in fields such as robotics, lasers, telecommunications, health, home economics, electronics, agriculture, business and marketing--and many others.

The four sets of materials have these characteristics in common:

--There's a separate book for each unit of instruction.
--Each unit has a separate teacher's guide.
--Each unit has a video component.
--Materials are competency-based.
--Materials are always field-tested and revised.
--The books are written at the eighth-grade reading level.
--Materials were designed for the mid-50% of the high school student population, but are also being used with adults.
--The materials teach by allowing students to do.
--The materials emphasize the occupational relevance of information and give work-related problems.
--Materials can be used as a separate course or used as part of an existing course.

More information about applied academics can be obtained by calling either your state's official consortium representative (at your State Department of Education) or The Agency for Instructional Technology at 1/800/457-4509 or The Center for Occupational Research and Development at 1 800/231-3015.

What Every Parent Should Know About Principles of Technology...

PT was the first of the applied academics to be developed through the consortia process. State agencies used the help of The Agency for Instructional Technology in Bloomington, Indiana, and another non-profit agency, The Center for Occupational Research and Development, to develop the materials. These materials include 14 student texts, 14 teacher's guides, and over 700 minutes of video.

PT presents applied physics in the context of the principle, such as force, in the mechanical, fluid, electrical, and thermal systems. About 60% of the students' time is spent in laboratory. There's even a special section in the materials to explain the mathematics skills needed in each section. Last year, the materials were cited as the best technical physics curriculum available by the American Academy of Science, and many states are granting science credit for the course.

Although PT is only about two years old, it's being used in 48 states, two Canadian provinces, three foreign countries--as well as in several postsecondary institutions as part of their retraining program for adults who also are seeking technical careers.

What Every Parent Should Know About Applied Mathematics...

Developed through a consortium of 41 states by CORD (concurrently with AIT's development of Applied Communication), Applied Mathematics is comprised of 25 student workbooks, 25 teacher's guides--and video presentations for each unit.

Occupationally specific problem-solving activities that involve students in relevant activities comprise the course. Materials are based on an integrated presentation of topics in arithmetic, algebra, geometry, trigonometry, probability, estimation, and problem-solving. The materials are oriented toward the application and practice of mathematics concepts and skills in hands-on labs and world-of-work problems.

Use of this course is doubling each year. For 1989-90, it's predicted that there will be at least 14,000 students throughout the consortium's 41 states.

More information about this course may be obtained by calling 1 800/231-3015.

What Every Parent Should Know About Applied Communication...

Communication skills provide the base for teamwork, problem-solving, and increased productivity. Therefore, this course helps students transfer improved reading, writing, listening, speaking, problem-solving, visual, and non-verbal skills to their occupations and personal lives.

Application activities in these materials are specific to careers in agriculture, business/marketing, health occupations, home economics, and technical/trade/industrial areas. Students in this course don't just learn *about* communicating--they practice it through participating in practical experiences such as directed conversations and mock meetings, as well as through writing memos, letters, and reports and constructing charts and graphs.

More information about this course may be obtained by calling 1 800/457-4509.

What Every Parent Should Know About Applied Biology/Chemistry...

Like the course in **Principles of Technology** which preceded it, the ABC materials are for students who plan to pursue technical careers--particularly careers related to home economics, health, agriculture/agribusiness, and technology-centered endeavors.

This course is currently being developed; materials will be ready for field-testing in the Fall of 1991. It's anticipated that this course will qualify in many of the states who are supporting it for one year of science credit if taught as a stand-alone course.

Laboratories in the curriculum will be developed in concert with industry, and twelve industries have already donated personnel and space to be used in the summer of 1990 for that endeavor. More information about this set of materials can be obtained by calling 1 800/231-3015.

STRENGTHENING BASIC COMPETENCIES OF STUDENTS ENROLLED IN VOCATIONAL PROGRAMS

- PRINCIPLES OF TECHNOLOGY (APPLIED PHYSICS)
- APPLIED COMMUNICATION
- APPLIED MATHEMATICS
- PRINCIPLES OF BIOCHEMISTRY (APPLIED BIOLOGY / CHEMISTRY)

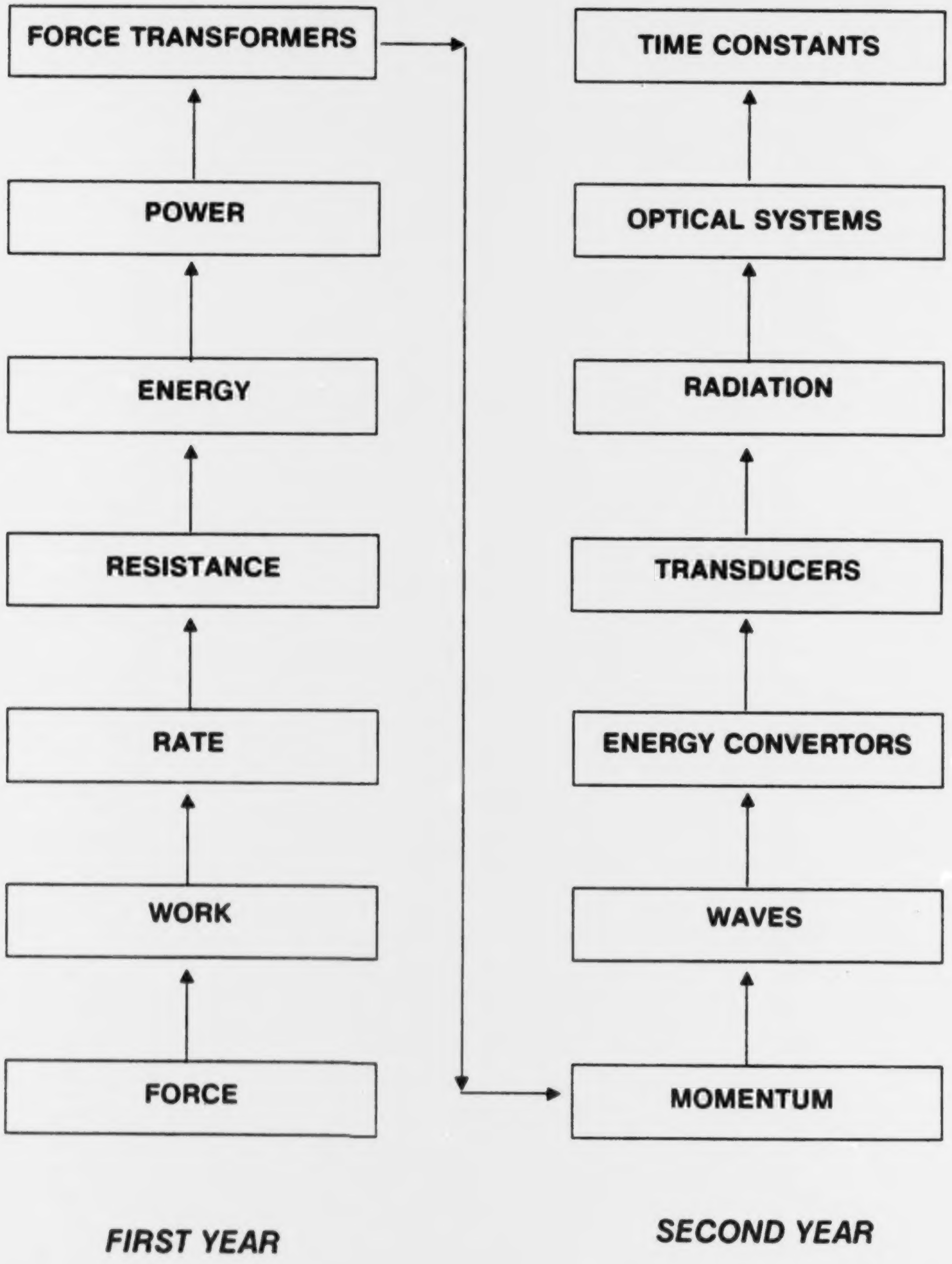
EACH COURSE MUST ADHERE TO THE FOLLOWING GUIDELINES:

- BE DOABLE BY NON-BACCALAUREATE BOUND STUDENTS
- BE PRACTICAL AND RELEVANT
- EMPHASIZE ASSOCIATED HANDS-ON LEARNING
- RETAIN INTEGRITY OF COURSE CONTENT

PRINCIPLES OF TECHNOLOGY IS

- AN APPLIED SCIENCE (PHYSICS) COURSE FOR SECONDARY SCHOOL VOC-ED STUDENTS—AND OTHERS
- AN INTEGRATED INSTRUCTIONAL PACKAGE THAT INCLUDES VIDEO, PRINT AND LABORATORIES
- BASED ON THE APPLICATION OF PRINCIPLES IN MECHANICAL, FLUID, ELECTRICAL AND THERMAL SYSTEMS—AND ON AN EMPHASIS OF THE ANALOGIES BETWEEN THESE SYSTEMS
- HEAVILY LABORATORY ORIENTED WITH HALF OF THE COURSE CONCENTRATING ON PROBLEM SOLVING MATH LABS AND HANDS-ON HARDWARE LABS

PRINCIPLES OF TECHNOLOGY
(UNITS 1—14)


FORCE TRANSFORMERS
POWER
ENERGY
RESISTANCE
RATE
WORK
FORCE
TIME CONSTANTS
OPTICAL SYSTEMS
RADIATION
TRANSDUCERS
ENERGY CONVERTORS
WAVES
MOMENTUM
FIRST YEAR
SECOND YEAR

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PRINCIPLES OF TECHNOLOGY

ORGANIZATION OF COURSE MATERIAL

TECHNICAL CONCEPT	Subunit 1 MECHANICAL SYSTEMS	Subunit 2 FLUID SYSTEMS	Subunit 3 ELECTRICAL SYSTEMS	Subunit 4 THERMAL SYSTEMS
UNIT I (FORCE)	● Video ● Principles ● Math Lab ● Hands-on Labs	●●●{ same }●●●	●●●{ }●●●●	●●●{ }●●●
UNIT II (WORK)	● Video ● Principles ● Math Lab ● Hands-on Labs	●●●{ }●●●	●●●{ }●●●●	●●●{ }●●●
	⋮	⋮	⋮	⋮

PRINCIPLES OF TECHNOLOGY

(A SUMMARY)

INSTRUCTIONAL MATERIALS FOR A TYPICAL UNIT

- 6 VIDEO SEGMENTS (40-50 MINUTES)
- 135 PAGES OF STUDENT TEXT
- 8 HANDS-ON APPLICATION LABS
- 4 CLASSROOM DEMONSTRATIONS
- 4 MATH PRACTICE LABS
- 270 PAGES OF TEACHER'S GUIDE

OVERALL PROGRAM

- TWO-YEAR DURATION
- 14 UNITS TOTAL
- 140-150 CLASSES PER YEAR
- 50-MINUTE CLASSES PER DAY
- 90 HANDS-ON APPLICATION LABS
- 46 MATH LABS
- 74 VIDEO SEGMENTS (700 MIN'S)
- 18 REMEDIAL MATH SKILLS LABS

APPLIED MATHEMATICS IS

- **AN APPLIED (INTEGRATED) MATHEMATICS COURSE FOR SECONDARY SCHOOL VO-TECH STUDENTS– AND OTHERS**
- **AN INTEGRATED, INSTRUCTIONAL SET OF COURSE MATERIALS THAT INCLUDES VIDEO, PRINT, HANDS-ON LABORATORIES AND PRACTICAL PROBLEM-SOLVING ACTIVITIES**
- **BASED ON AN INTEGRATED PRESENTATION OF TOPICS IN ARITHMETIC, ALGEBRA, GEOMETRY, TRIGONOMETRY, PROBABILITY, ESTIMATION AND PROBLEM SOLVING**
- **ORIENTED TOWARD APPLICATION AND PRACTICE OF MATHEMATICS CONCEPTS AND SKILLS IN HANDS-ON LABORATORIES AND PRACTICAL, WORLD-OF-WORK PROBLEMS**

The 25 Units That Make Up Applied Mathematics

Unit	Title
PREPARATORY UNITS	
A	Getting to Know Your Calculator
B	Naming Numbers in Different Ways
C	Finding Answers with Your Calculator
APPLIED MATH UNITS	
1	Learning Problem-solving Techniques
2	Estimating Answers
3	Measuring in English and Metric Units
4	Using Graphs, Charts and Tables
5	Dealing with Data
6	Working with Lines and Angles
7	Working with Shapes in Two Dimensions
8	Working with Shapes in Three Dimensions
9	Using Ratios and Proportions
10	Working with Scale Drawings
11	Using Signed Numbers and Vectors
12	Using Scientific Notation
13	Precision, Accuracy, and Tolerance
14	Solving Problems with Powers and Roots
15	Using Formulas to Solve Problems
16	Solving Problems That Involve Linear Equations
17	Graphing Data
18	Solving Problems That Involve Nonlinear Equations
19	Working with Statistics
20	Working with Probabilities
21	Using Right-triangle Relationships
22	Using Trigonometric Functions

WHAT'S IN A UNIT
OF APPLIED MATHEMATICS?

- VIDEO
- MATH TEXT
- 3 MATH LAB ACTIVITIES
- PROBLEM-SOLVING EXERCISES
  - 5 GENERAL PROBLEMS
  - 7 AGRICULTURE / AGRIBUSINESS
  - 7 HEALTH OCCUPATIONS
  - 7 HOME ECONOMICS
  - 7 BUSINESS AND MARKETING
  - 7 INDUSTRIAL TECHNOLOGY
- SPECIAL EQUIPMENT
  - SCIENTIFIC CALCULATOR
  - ACCULINE T.M. DRAWING KIT

A SUGGESTED SIX-SESSION TEACHING STRATEGY FOR EACH UNIT

Session 1: Getting Started	Sessions 2 & 3: Learning the Skills	Sessions 4 & 5: Applying the Skills	Session 6: Looking Back
• Introduction • Unit Video • Class Problem	• Class Activities • Read and Do • Class Discussion • Study Examples	• Do Hands-on Math Labs • Solve Problems • Use Calculators	• Review the Main Points • Evaluate Progress

MOTIVATION → COMPREHENSION → APPLICATION → REVIEW AND EVALUATION

WHAT WILL
APPLIED FOUNDATION COURSES
ACCOMPLISH ?

FOR THE STUDENT:

- BUILD A SOLID BASE OF MATH / SCIENCE PRINCIPLES
- BUILD A PRE-TECH FOUNDATION FOR POSTSECONDARY TECHNICAL EDUCATION PROGRAMS
- PROVIDE A BROAD KNOWLEDGE BASE THAT ENSURES FLEXIBILITY IN A CHANGING WORKFORCE
- MAKE MATH / SCIENCE ACCESSIBLE TO MINORITY STUDENTS

FOR THE TEACHER:

- BRIDGE THE GAP BETWEEN THE VOCATIONAL AND ACADEMIC SIDES OF THE "HOUSE"
- RELATE THE MATH / SCIENCE PRINCIPLES TO THE PRACTICAL WORLD OF INDUSTRY
- MAKE TEACHING MINORITY STUDENTS A SUCCESSFUL EXPERIENCE

FOR EMPLOYERS:

- PROVIDE A WORKFORCE THAT CAN BE TRAINED / RETRAINED EFFECTIVELY AS THE NEED ARISES
- MOVE INDUSTRY INTO A CLOSER PARTNERSHIP WITH EDUCATION

NORTHWEST CONFERENCE
ON
COMPETENCY-BASED VOCATIONAL EDUCATION

October 18-20, 1989
Bend, Oregon

SESSION:

TESTING

Presenter: Brenda C. Hattaway
Assistant Director, V-TECS

THREE STAGES OF CLASSROOM MEASUREMENT

Constructing Instructional Objectives

Implementing Instructional Activities

Testing to Measure the Attainment of the Objectives

STUDENT ASSESSMENT PROCEDURES

What student assessment procedures will be used?

How will standards of acceptable performance be set?

What will be the format for the assessment instruments?

How will situations and materials for performance testing be provided?

REPORTING OF STUDENT PROGRESS AND ACHIEVEMENT

Who will certify achievement of each competency by each student?

How will achievement of each competency be reported?

How will students be kept informed and advised about their progress?

What "grading" system will be used to report student achievement?

How will permanent records of student achievement be organized and maintained?

OBJECTIVES

Objectives are derived directly from the task statement. Thus they must express precisely the type of behavior already identified in the task. If the statement of the task includes a clearly identifiable behavior, the task of writing an objective becomes simply the adding of criteria for assessment and describing the conditions under which the behavior must be performed.

Example

Task Statement (knowledge):	Divide a scale into tenths.
Objective:	Given a scale divided into whole units, divide one unit into tenths. The number of subunits must be ten, and the size of all units must be approximately the same.

Three components should be addressed in writing objectives:

Conditions. Conditions describe the setting in which the task will be performed. Conditions may include things, situations, or restrictions. Here are some examples of conditions that might be included in an objective.

"With the use of notes and references . . ."
"Without the aid of a calculator . . ."
"Given a hammer and saw . . ."

Keep in mind the following guidelines when writing the conditions component of an objective:

1. Avoid a long list of specific tools, equipment and so on; the objective may become quite lengthy and of little use.

2. Be careful not to include anything in the conditions that the learner should not be given during the performance of the task. If the learner must determine what tools are needed or must locate the correct replacement parts before performing a service, do not list these tools and parts in the condition component. Mention any special restrictions under which the learners will have to perform.

3. Avoid specifying any reference as to how the student will learn the task. Do not use phrases such as "given a lecture on," give the required reading material," and so on. The condition focuses on the performance situation - not the learning situation. Remember, a student may be able to perform as stated in the objective without ever going through any of the learning activities.

4. Avoid making the conditions too specific. For example, "given two pieces of polyester, 4 inches by 4 inches," might be too restrictive. "Given two pieces of material," may be sufficient. Do not pin yourself down unnecessarily.

Performance. The performance component is based on the task statement. In many cases the performance component will be an exact restatement of the task.

Keep in mind the following guidelines when writing the performance component of objectives.

1. Base the performance on the statement and keep it precise.
2. Do not confuse instructor performance with student performance. Never use "will teach," "will demonstrate," "will present," or other instructor behaviors. Objectives describe what the learner should be able to do.
3. Avoid vague terms such as "demonstrate knowledge of," "understand," "show mastery of," "be familiar with," "know," "learn," or other such phrases that are not clearly observable.
4. Avoid terms such as "fully," "completely," "really," and so on.

Performance Standard. The performance standard describes how well the learner must perform in order to demonstrate mastery of the objective.

Keep in mind the following guidelines when writing the performance standard component of objectives.

1. Avoid vague criteria such as "to instructor's satisfaction," "in accordance with procedures," by following written instructions." It is impossible to know what such phrases mean. Focus upon measurable factors of quality, quantity, and preciseness of performance.
2. Avoid tying the criteria to instruction. Do not use phrases such as "following criteria in textbook," or "according to exercises in the workbook." These resources could change - performance standards should not.
3. Make the criteria comprehensive enough to include all the important indicators of competence. Include criteria covering typical errors made by learners.
4. Do not make the criteria too restrictive. For example, if the process a learner uses is of no consequence on the job, do not include the process in the performance standard.
5. Make sure the performance matches the task. If the task is to "clean spark plugs," then the objective must require the learner to clean the spark plugs, not distinguish clean from dirty plugs.

Example #1

Classification of Objectives and Action Verbs

A. Definitions

Define
Describe
List
Identify

B. Procedures

Demonstrate (the process for . . .)
Apply (the steps of . . .)
Perform (the critical elements of . . .)
Model (the behaviors listed on . . .)
Follow (the specifications stated in . . .)

C. Decision Making

Order
Classify
Categorize
Choose
Compare
Contrast
Select
Distinguish between
Predict
Diagnose
Solve
Estimate
Critique
Judge

D. Creative Thinking

Analyze
Illustrate
Translate
Interpret
Write
Design
Troubleshoot
Plan

Example #2

Classification of Objectives and Action Verbs

A. Information

List
Cite
State
Name
Locate
Identify
Select
Arrange
Sort

B. Application

Classify
Define
Relate
Contrast
Calculate
Record
Transcribe
Inspect
Implement
Explain
Describe
Compare
Solve
Convert
Translate
Determine
Interpret

C. Problem Solving

Develop
Analyze
Manage
Diagnose
Initiate
Design
Assess
Modify
Troubleshoot
Choose
Service
Repair
Operate
Construct
Fabricate

TASK ANALYSIS -- THE KNOWLEDGE COMPONENT

Step 1 – Identify what a person *must* know in order to perform a task.

COGNITIVE LEVEL 1
(Recall of verbal information)

- Names and labels
- Facts
- Terms
- Definitions
- Procedures and methods
- Rules

COGNITIVE LEVEL 2
(Application of knowledge)

- Using formulas
- Interpreting charts, graphs, and diagrams
- Classifying (objects, concepts)
- Selecting appropriate rules to solve problems
- Applying rules to specific situations or conditions
- Solving "paper and pencil" problems (word problems)
- Solving "hands-on" problems (diagnosing, troubleshooting, debugging)
- Analyzing (comparing, contrasting, distinguishing)
- Evaluating (judging, assessing)
- Synthesizing (designing, planning, organizing)

Step 2 -- Express the knowledge components necessary to perform the task as one or more cognitive, measurable objectives.

VERBS COMMONLY USED IN WRITING OBJECTIVES

RECALL OR RECOGNITION LEVEL

arrange
list
define
name
identify
sequence
label
state

APPLICATION LEVEL

analyze
score
evaluate
diagram
assess
value
rate
revise
classify
appraise
select
judge
differentiate
calculate
choose
estimate
compare
apply
solve
measure
discriminate
distinguish

TASK ANALYSIS

Performance Standards

Steps

Knowledge

Skills

Attitudes

Safety

Tools, Equipment & Supplies

ANALYZE EACH STEP, ASKING THESE CRITICAL QUESTIONS · · ·

- What does the student need to know to do this step?
- What does the student need to do to complete this step?
- What safety skills does the student have to perform?
- What employability skills does the student have to perform?

TASK/COMPETENCY ANALYSIS WORKSHEET

Instructional Area:	Source of Task List:
Duty Area:	Source of Task/Competency:
Task or Competency:	Worksheet Writer: Date:
Performance Objective Number:	Worksheet Reviewer: Date:

Terminal Performance Objective Information

The student will be able to: ____

Under these conditions: ____

Given the following equipment, tools and /or supplies: ________________________

Utilizing the following standards of performance: ____________________________

PERFORMANCE STEPS	KNOWLEDGE	PSYCHOMOTOR SKILLS	ATTITUDE (e.g., safety, employability skills)

TEST ITEM CONSTRUCTION GUIDELINES

A. General

1. Be sure each item deals with an important aspect of the content area, and not with trivia.
2. Be sure that the problem posed is clear, concise and unambiguous.
3. Avoid cuing one item with another; keep items independent. (The answer to one item should not be required as a condition for answering the next item, nor should a hint to one answer be unintentionally embedded in another item.)
4. Avoid potentially insensitive content or language.
5. Be sure that the item is at the appropriate level for the competency.
6. Be sure that the item measures the intended competency.
7. Keep the vocabulary level as simple as possible.
8. Avoid phrasing in writing test items; don't quote directly from textual materials. Taken out of context, direct quotes from a text are often ambiguous.
9. Avoid trick items, these which mislead or deceive examinees into answering incorrectly.
10. Avoid items based on opinions.
11. Item content should be accurate and up-to-date.

B. Multiple-Choice Items

1. The stem of the item should clearly formulate a problem.
2. Include the central idea and most of the phrasing in the stem keeping the response options as short as possible.
3. Include only the material needed to make the problem clear and specific. Don't add extraneous information.
4. Word the stem positively. Avoid negative phrasing. (In most cases, it is more important for the examinee to know what a specific item of information is rather than what it is not.)
5. If an item must be stated negatively, underline or capitalize the negative word.
6. State the stem in either question form or completion form.

7. Format the item vertically, not horizontally.

8. Include four options, arranged in a logical order, if one exists (e.g., numerical, alphabetical).

9. Be sure that there is one and only one correct or clearly best answer on which experts would agree.

10. Be sure wrong answer choices (distractors) are plausible.

11. Eliminate unintentional grammatical clues.

12. Keep the length and form of all the answer choices similar. (Grammatical inconsistencies such as "a," or "an" give clues to the correct answer.)

13. Use the option "none of the above" sparingly and only when the keyed answer can be classified unequivocally as right or wrong.

14. Avoid, or use sparingly, the phrase "all of the above." It is usually the correct answer and makes the item too easy for examinees with partial information.

15. Avoid using words such as "always," "only," and "never" that may give away a wrong answer.

16. Incorporate common errors of students in distractors.

17. Position the correct option so that it appears about the same number of times in each possible position.

C. Matching Items

1. Keep both the list of descriptions and the list of options fairly short and homogeneous -- they should both fit on the same page. Title the lists to ensure homogeneity and arrange the descriptions and options in some logical order.

2. Make sure that all the options are plausible distractors for each description to ensure homogeneity of lists.

3. The list of descriptions should contain the long phrases or statements, while the options should consist of short phrases, words, or symbols.

4. Each description in the list should be numbered (each is an item) and the list of options should be identified by letter.

5. Include more options than descriptions. If the option list is longer than the description list, it is harder for examinees to eliminate options. If the option list is shorter, some options must be used more than once. Always include some options that do not match any of the descriptions, or some that match more than one, or both.

6. In the directions, specify the basis for matching and whether options can be used more than once.

D. Performance Items

1. Provide directions for the teacher/evaluator.

2. List the tools, equipment, and materials to perform the task.

3. Provide directions to the student.

4. State the task or skill to be performed.

5. State the criteria for evaluating the performance.

6. Product Evaluation:

   a. Include all important parts of the product.
   b. Describe the parts of the product briefly and clearly.
   c. Organize the parts of the checklist in a way that facilitates their assessment.
   d. Make sure the rating scale is appropriate for each part of the product.
   e. Base the checklist on the way the product is supposed to look, work, be repaired, etc., on the job.
   f. Determine if two qualified evaluators using the checklist would score the same product in the same way or in nearly the same way.

7. Process Evaluation:

   a. Include all important steps of the process.
   b. State the steps briefly and clearly.
   c. Sequence the steps in order of performance.
   d. Make sure the rating scale is appropriate for each step.
   e. Make sure that all statements are observable.
   f. Determine if two qualified evaluators using the checklist would score the same performance in the same way, or in nearly the same way.

CNC TEST ITEM BANK

1. Catalog Information:

Catalog Title: Computerized Numerical Control
Catalog Number: IL08
DOT codes: 007.167-018 Tool Programmer
609.662-010 Tool Operator

2. V-TECS Project Number

CNC item development project number: IL12

3. Related Guide

Guide Title: Computerized Numerical Control
Guide Number: IL10

4. Item Code Layout

* CATALOG NUMBER	STATE	DATE	ITEM TYPE	DUTY	TASK	LEARNING DOMAIN	# OF GRAPHICS	ANSWER	UNIQUE NUMBER

5. Number of items:

266 multiple choice items
20 matching items

EXAMPLE: **READ.ME**

This disk contains the Computerized Numerical Control (CNC) test item bank. Information regarding this bank is contained in four files:

1. CNC.DOC

   - Catalog Title and Catalog Number
   - DOT code(s) and CIP code(s) as specified in the CNC catalog.
   - Project Number assigned to the CNC item bank by the V-TECS central office.
   - Title and number of related curriculum guide, if available.
   - Item code layout
   - Total number of items

2. CNC.TL

   CNC duty and task list from the CNC catalog

3. CNC.MC

   Multiple-choice items along with their individual code line(s)

4. CNC.MA

   Matching items along with their individual code line(s)

Georgia State University
School of Nursing

FINAL (COMPLETE) TEST BLUEPRINT

Examination #: ______

Total # of Hours of Instruction: ______

Course: ______________________________

Total # of Items: ______

Quarter: ______________________________

Date: ______________________________

Total Test Time: ______________________________

Course Administrator: ______________________________

Objective	Sub Concept	Cognitive Level	Hours Allotted for Instruction	Item No.

OKLAHOMA DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION

TEST PLAN WORKSHEET

Program:____________________________

Test Battery Code:______________________

Code	Duty/Task	Criticality	Hands-on Components	Cognitive Items	Scenario Sets
M.0	INSTALL BATT INSULATION				
M.1	Estimate material needs for walls	.56	1	6	1
M.2	Identify types of insulation materials	.75	1	8	1
M.3	Install thermal insulation	.93	2	10	1

Test Assembly Checklist

Put a check in the blank to the right of each statement after you've checked to see that it applies to your test.

	Yes	No
1. Are items of similar format grouped together?	____	____
2. Are items arranged from easy-to-hard levels of difficulty?	____	____
3. Are items properly spaced?	____	____
4. Are items and options on the same page?	____	____
5. Are diagrams and supporting material above designated items, and on the same page with items?	____	____
6. Are answers random?	____	____
7. Is an answer sheet enclosed in the test packet?	____	____
8. Are blanks for name and date included?	____	____
9. Have the directions been checked for clarity?	____	____
10. Has the test been proofread for errors?	____	____
11. Do items avoid racial or sexual bias?	____	____

Guidelines for Preparing Directions

1. Assume that the examinees know nothing about tests.
2. Use clear, succinct style.
3. Make the more important directions stand out through the use of different sizes or styles of type.
4. Give the examiner and/or proctor instructions on what to do prior, during, and after the test administration.
5. Check on all possible misunderstandings and inconsistencies by having several people try out the directions.
6. Keep various directions for subsections parallel with each other.
7. When necessary, include sample items with the directions.

CHECKLIST FOR CRITERION-REFERENCED TESTS

Is my test appropriate?

Is my test valid?

Is my test reliable?

Is my test interpretable?

Is my test usable?

REFERENCES

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MAVCC
Mid-America Vocational Curriculum Consortium

WRITING PERFORMANCE OBJECTIVES

Presentation by:
Jim Steward, Executive Director

October 18-20, 1989
Northwest Conference on Competency-Based
Vocational Education
Bend, OR

1500 W. Seventh, Stillwater, Oklahoma 74074-4364 Phone: 405-377-2000 Toll Free: 1-800-654-3988

WRITING PERFORMANCE OBJECTIVES

UNIT

After completing this unit, the participant should be able to distinguish between performance and non-performance objectives; convert non-performance objectives to performance objectives; write performance objectives using performance terms; and write test questions to measure the objectives. Competencies will be demonstrated by completing the assignment sheets and the unit test with a minimum score of 85 percent.

SPECIFIC OBJECTIVES

After completing this unit, the participant should be able to:

1. Match terms associated with performance objectives to the correct definition.
2. List three advantages of using performance objectives.
3. State guidelines for implementing performance objectives.
4. Select the three components of a performance objective.
5. Match nine performance terms to their correct definitions.
6. Select components of performance objectives (Assignment Sheet #1).
7. Distinguish between performance objectives and non-performance objectives (Assignment Sheet #2).
8. Convert non-performance objectives to performance objectives (Assignment Sheet #3).
9. Write performance objectives (Assignment Sheet #4).
10. Write a test question for performance objectives (Assignment Sheet #5).

WRITING PERFORMANCE OBJECTIVES

INFORMATION SHEET

I. Terms and definitions

   A. Educational goal--Description of long-range aims of educational program, broad general end toward which program is directed

   B. Performance objective (behavioral, measurable)--Statement of behavior that instruction is to produce stated in terms of observable or measurable student performance

   C. Unit objective--Performance objective stating the subject matter to be covered in terms of student performance within a unit of instruction

   D. Specific objective (interim, subobjective, enabling, subordinate, and en route)--Performance objective stating performance required of student in order to reach unit objective

   E. Cognitive-domain objectives--Objectives which deal with the development of intellectual abilities and skills

   F. Psychomotor-domain objectives--Objectives which deal with manipulative skills

   G. Affective-domain objectives--Objectives dealing with attitudes, values, interests, appreciation, and social-emotional adjustments

   H. Evaluation--Measure of student performance and teacher effectiveness. (NOTE: An evaluation activity may be verbal, nonverbal, manipulative, or any type of performance, provided it is appropriate for measuring the performance objectives.)

   I. Process evaluation--Measure of student's ability to perform as he/she carries out a given process

   J. Product evaluation--Measure of a product of student's performance

II. Advantages of using performance objectives

   A. Makes course content clear to administrators, teacher, and student

   B. Assist in student recruitment

   C. Aids in public relations

INFORMATION SHEET

- D. Aids in selection of instructional materials
- E. Helps secure finances for programs
- F. Aids teacher in evaluating instruction
- G. Facilitates development of pretests, post-tests, make-up-work assignments, etc.
- H. Allows for focusing teacher, student, and classroom resources toward measurable goal
- I. Assists with student motivation

III. Guidelines for implementing performance objectives

- A. Convert general objectives to performance objectives
- B. Write performance objectives for educational goals

  Examples: Tests on file. Analyze subject being taught in terms of desired behavioral change in students.

IV. Components of a performance objective

- A. Person who is to exhibit behavior
- B. Behavior or action learner is expected to exhibit
- C. Minimum level of acceptable responses (evaluation)

V. Performance terms

- A. Name--Supply name for object, event, or person

  (NOTE: Synonyms include - label, list, letter, record, reiterate, repeat, and write.)

- B. Identify--Select named, described, or pictured object by pointing to it, touching it, picking it up, or selecting it.

  (NOTE: Synonyms include - select, mark, match, choose, and judge.)

- C. State a rule--Communicate a relationship or principle that could be used to solve problems or perform a task
- D. Apply a rule--Supply an answer to a problem by using a stated relationship or principle

  (NOTE: Synonyms include - solve and calculate.)

INFORMATION SHEET

E. Describe--Relate sufficient characteristics or properties of object or event so that second individual will be able to state what is being discussed

(NOTE: Synonyms include - define, discuss, interpret, recite, and tell how.)

F. Distinguish--Select an object or event from two or more that are easily confused

(NOTE: Synonyms include - discriminate and differentiate.)

G. Order--Arrange three or more objects or events in a sequence based on a stated property

(NOTE: Synonyms include: arrange in order, sequence, list in order, classify, divide, and isolate.)

H. Construct--Make a physical object, a verbal statement, or a drawing

(NOTE: Synonyms include--draw, make, build, design, formulate, reproduce, transcribe, convert, put together, and compile.)

I. Demonstrate--Perform several operations necessary to carry out a specified process

(NOTE: Synonyms include--show you work, show procedure, perform an experiment, perform the steps, operate, remove, replace, turn off/on, (dis)assemble and (dis)connect.)

WRITING PERFORMANCE OBJECTIVES

ASSIGNMENT SHEET #1--SELECT COMPONENTS OF PERFORMANCE OBJECTIVES

Name________________________________ Score____________________

Using each of the statements below, select the three components of a performance objective. Underline the portion that describes the person who is exhibiting the behavior, circle the portion that describes the behavior to be exhibited, and box in the portion that describes the minimum level of acceptable performance.

1. After completion of this unit, the student will be able to identify the parts of a beef animal with eighty-five percent accuracy.

2. After completion of this unit, the students ill be able to type forty words per minute with no errors.

3. After completion of this unit, the student will be able to calculate true interest rates when given the rate of interest and length of the loan with ninety-five percent accuracy.

4. After completion of this unit, the student will be able to demonstrate the ability to adjust an automatic choke to the satisfaction of the instructor.

5. After completion of this unit, the student will be able to define terms associated with behavioral objectives with eighty-five percent accuracy.

6. The student will demonstrate his ability to wire a three-way electrical switch according to the specification of the National Electric Code.

7. The student will be able to construct a bar graph showing the relationship between supply and demand to the satisfaction of the instructor.

8. After completion of this unit, the student will be able to distinguish between simple and compound sugars with eighty-five percent accuracy.

9. After completion of this unit, the student will be able to transcribe dictation from a tape into typewritten form with a minimum of three errors.

10. After completion of this unit, the student will be able to lead a group discussion for thirty minutes according to Robert's Rules of Order.

WRITING PERFORMANCE OBJECTIVES

ASSIGNMENT SHEETS #2--DISTINGUISH BETWEEN PERFORMANCE OBJECTIVES AND NON-PERFORMANCE OBJECTIVES

Name ________________________________ Score ____________________

Read the following list of statements. Circle "Yes" when the statement describes observable student behavior or "No" when the statement does not describe observable student behavior.

Yes No 1. The student will be able to read and understand the meaning of a poem within thirty minutes with 100% accuracy.

Yes No 2. The student will be able to distinguish between cool- and warm-season plants by observing their growing habits to the satisfaction of the instructor.

Yes No 3. The student will be able to identify twenty trees found growing in the community with ninety percent accuracy.

Yes No 4. The student will be able to construct a bar graph showing last week's temperature range to the satisfaction of the instructor.

Yes No 5. The student will be able to understand the meaning of Ohm's law as related to electricity to the satisfaction of the instructor.

Yes No 6. The teacher will be able to demonstrate the ability to adjust idle speed on a Carter carburetor according to the specifications of the operator's manual.

Yes No 7. The student will be able to calculate the cost of operating an electric motor for four hours with 100% accuracy.

Yes No 8. The student will be able to demonstrate shorthand skill by transcribing dictation from a tape with a minimum of three errors.

Yes No 9. The student will be able to illustrate the relationship between supply and demand by plotting each on a bar graph that has a point of intersection with eighty-five percent accuracy.

Yes No 10. The student will be able to lead a group discussion according to Robert's Rules of Order.

WRITING PERFORMANCE OBJECTIVES

ASSIGNMENT SHEETS #3--CONVERT NON-PERFORMANCE OBJECTIVES TO PERFORMANCE OBJECTIVES

Name ______________________________ Score ____________________

Below are ten non-performance objectives. Convert these objective so that they are performance objectives.

1. The student should know how to diagram a sentence.

   Modified objective:

2. The teacher should explain the causes of the Civil War.

   Modified objective:

3. The student should demonstrate a working knowledge of converting common fractions to decimals.

   Modified objective:

4. The student should know how to assume a "prone" position.

   Modified objective:

5. The student should understand the steps in solving a mathematical equation.

   Modified objective:

ASSIGNMENT SHEET #3

6. The student should be familiar with the chemical formula for water.

   Modified objective:

7. The student should realize fully the difference between behaviorally stated and non-behaviorally stated objectives.

   Modified objective:

8. The student should know how to use the receipe for baking a cake.

   Modified objective:

9. The teacher should know how to balance a chemical equation.

   Modified objective:

10. The student should master the art of oil painting.

    Modified objective:

WRITING PERFORMANCE OBJECTIVES

ASSIGNMENT SHEET #4--WRITE PERFORMANCE OBJECTIVES

Name ______________________ Score ______________

Write performance objectives using each of the performance terms listed below (or one of their synonyms).

1. Name

2. Identify

3. State a rule

4. Apply a rule

5. Describe

6. Distinguish

7. Order

8. Construct

9. Demonstrate

566

ASSIGNMENT SHEETS #5--WRITE A TEST QUESTION FOR PERFORMANCE OBJECTIVES

Write a test question for each of the objectives you wrote on Assignment Sheet #4.

(NOTE: Test for same behavior as called for by specific objectives.)

1.

2.

3.

4.

5.

6.

7.

8.

9.

WRITING PERFORMANCE OBJECTIVES

TEST

Name ______________________________ Score ____________________

1. Match terms associated with performance objectives to the correct definition.

_____a. Statement of behavior that instruction is to produce stated in terms of observable or measurable student performance

_____b. Measure of a product of student's performance

_____c. Objectives which deal with manipulative skills

_____d. Objectives which deal with attitudes, values, interests, appreciation, and social-emotional adjustments

_____e. Description of long-range aim of the educational program; broad general end toward which program is directed

_____f. Performance objective stating performance required of student in order to reach unit objective

_____g. Objectives which deal with the development of intellectual abilities and skills

_____h. Measure of student performance and teacher effectiveness

_____i. Performance objective stating the subject matter to be covered in terms of student performance within a unit of instruction

_____j. Measure of student's ability to perform as he/she carries out a given process

1. Psychomotor-domain objectives
2. Product evaluation
3. Performance objective
4. Specific objective
5. Cognitive-domain objectives
6. Educational goals
7. Unit objective
8. Evaluation
9. Affective-domain
10. Process evaluation

2. List three advantages of using performance objectives.

a.

b.

c.

3. State guidelines for implementing performance objectives.

a.

b.

4. Select the components of a performance objective. Underline the portion that describes the person who is exhibiting the behavior, circle the portion that describes the behavior to be exhibited, and box in the portion that describes the minimum level of acceptable performance.

After completion of this unit, the student should be able to identify the different varieties of trees and shrubs found growing the local community with eighty-five percent accuracy.

5. Match the performance terms to their correct definitions.

_____a. Relate sufficient characteristics or properties of object or event so that second individual will be able to state what is being discussed.

_____b. Select named, described, or pictured object by pointing to it, touching it, picking it up, or selecting it

_____c. Arrange three or more objects or events in a sequence based on a stated property

_____d. Communicate a relationship or principle that could be used to solve problems or perform a task

_____e. Supply name for object, event, or person

_____f. Perform several operations necessary to carry out a specified process

1. Apply a rule
2. Construct
3. Name
4. Identify
5. Demonstrate
6. Order
7. State a rule
8. Distinguish
9. Describe

_____g. Make a physical object, a verbal statement, or a drawing

_____h. Select an object or event from two or more that are easily confused

_____i. Supply an answer to a problem by using a stated relationship or principle

(NOTE: If the following activities have not been accomplished prior to the test, ask your instructor when they should be completed.)

6. Select components of performance objectives (Assignment Sheet #1).

7. Distinguish between performance objectives and non-performance objectives (Assignment Sheet #2).

8. Convert non-performance objectives to performance objectives (Assignment Sheet #3).

9. Write performance objectives (Assignment Sheet #4).

10. Write a test question for performance objectives (Assignment Sheet #5).

YOUTH EMPLOYMENT COMPETENCIES

Northwest Conference on Competency-Based Vocational Education
October 18-20, 1989

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Employer hiring standards can be grouped into major categories of individual abilities or traits. The following general descriptions of youth competency skill areas integrate definitions by the U. S. Department of Labor regulations (March 7, 1988):

1. Preemployment/Work Maturity Skills. Preemployment skills refer to those skills needed to choose a career, look for and obtain a job. They include skills that enable an individual to sell his or her competencies to the employer. Preemployment skills include world of work awareness, labor market knowledge, occupational information, values clarification and personal understanding, career planning and decision making, and job search techniques (resumes, interviews, applications, and follow-up letters). They also encompass survival/daily living skills such as using the phone, telling time, shopping, renting an apartment, opening a bank account, and using public transportation.

   Work maturity skills are evidenced by an understanding of, and ability to respond to, the basic requirements of the work environment. This includes positive work habits, attitudes, and behavior such as punctuality, regular attendance, presenting a neat appearance, getting along and working well with others, exhibiting good conduct, following instructions and completing tasks, accepting constructive criticism from supervisors and co-workers, showing initiative and reliability, and assuming the responsibilities involved in maintaining a job. This category also entails developing motivation and adaptability, obtaining effective coping and problem-solving skills, and acquiring an improved self-image.

   An SDA must include all of the following "core" competency topics within the preemployment/work maturity competency training curriculum. In order for an attainment to be reported in the area of preemployment/work maturity, an individual must demonstrate proficiency in each of the eleven core compentencies. At least five of these learning objectives must have been achieved during program intervention:

   Minimum "Core" Competencies

   Making career decisions
   Using labor market information
   Preparing resumes
   Filling out applications
   Interviewing
   Being consistently punctual
   Maintaining regular attendance
   Demonstrating positive attitudes/behaviors
   Presenting appropriate appearance
   Exhibiting good interpersonal relations
   Completing tasks effectively

2. Basic Education Skills. Training which results in the achievement of basic education skill levels necessary for entry into the labor market. Basic education skills include reading comprehension, math computation, writing, speaking, listening, problem solving, reasoning, and the capacity to use these skills in the work place. The PIC will establish local requirements to meet basic education skills certification.

3. Job-Specific Skills. Training which would prepare participants to meet the entry-level specific skills relative to their possible occupational goals. Job-specific achievement would include a demonstrated proficiency in the knowledge and skills normally required to carry out tasks of a specific occupation or cluster of occupations. Primary job-specific skills encompass the proficiency to perform actual tasks and technical functions required by certain occupational fields at entry, intermediate or advanced levels. Secondary job-specific skills entail familiarity with and use of set-up procedures, safety measures, work-related terminology, recordkeeping and paperwork formats, tools, equipment and materials, and breakdown and clean-up routines. The PIC will establish a procedure and/or set standards to meet the job skills youth competency.

70001 Pre-Employment/Work Maturity Skill Competencies

1. Making Career Decisions

(1.1.2) Given newspaper want ads and a list of jobs which the trainee has identified as being of interest to him/her, the trainee will circle ads which contain job openings that match his/her personal list.

(5.9.1) The trainee will list five short-term and two long term career goals and project dates when they could be reached.

2. Using Labor Market Information

(1.1.4) The trainee will list five different sources for locating employment opportunities.

(1.1.3) The trainee will use the newspaper and the yellow pages to locate and write out:

1. the names of two potential employers
2. the telephone numbers
3. the addresses of the businesses.

3. Preparing Resumes

(2.1.3) Using a resume outline form, the trainee will write a draft resume including all pertinent information, accurately stated, with correct spelling.

(2.1.4) Using the corrected draft resume the trainee will prepare a final resume and will receive a satisfactory on each item on the Resume Rating Scale.

4. Filling Out Applications

(2.1.1) Given a blank Personal Data Booklet, the trainee will fill in all personal job-related information.

(2.1.2) Given a job application, the trainee will use his/her Personal Data Booklet to fill in the job application and will receive a satisfactory rating on each item on the Job Application Rating Scale.

5. Interviewing

(2.2.2) In a roleplay, the trainee will respond to five commonly asked interview questions by:

1. speaking clearly
2. dealing with the question directly
3. maintaining eye contact.

(2.2.5) On a day designated as a practice interview day, the trainee will be interviewed for a job and will receive a minimum rating of satisfactory on each item on the Interview Rating Scale.

6. Being Consistently Punctual

(3.1.1) The trainee will describe the behaviors that constitute being "on time."

(*) The trainee will be "on time" to training sessions 90% of the time.

7. Maintaining Regular Attendance

(3.1.2) In a roleplay, the trainee will demonstrate the appropriate procedure for notifying the employer when tardiness or absence is necessary.

(3.1.3) After attendance guidelines have been established, the trainee will attend sessions regularly and will telephone prior to class if he/she must miss a session.

8. Demonstrating Positive Attitudes/Behavior

(3.4.3) In a roleplay where different styles of supervisory directions are given, the trainee will demonstrate through words or behavior two positive reactions to the directions.

(4.3.1) The trainee will identify the following factors which may affect promotions: performance, good work record, attitude, appearance, leadership potential, and loyalty.

(5.2.3) The trainee will exhibit risk taking in class by displaying at least one of the following behaviors daily:

1. responding to questions
2. volunteering for tasks
3. trying new things
4. participating in activities.

9. Presenting Appropriate Appearance

(3.2.1) Given the categories: interview, office, fast food restaurant, and construction, the trainee will list four rules for appropriate dress for each category.

(2.3.2) Given pictures of good & poor grooming, the trainee will evaluate them according to hair, hygiene, and clothing and will state what changes would improve the poor grooming.

(*) The trainee will present an appropriate appearance for training sessions 90% of the time by:

1. wearing appropriate clothes
2. having neatly groomed hair
3. having good hygiene.

10. Exhibiting Good Interpersonal Skills

(5.4.1) The trainee will state five behaviors exhibited by "good listeners."

(5.4.2) In a one-to-one situation where the speaker is explaining a subject, the trainee will receive a minimum rating of three on each item on the Communications Rating Scale.

(5.5.1) The trainee will describe six desirable behaviors to display in a work setting.

11. Completing Tasks Effectively

(5.8.2) Based upon performance in training sessions, the trainee will receive a minimum of three on the applicable items (4,5,6,7) on the Work Maturity Rating Scale.

* New objectives

PRE-TEST

COMPETENCY 1: Making Career Decisions

Have program applicant:

1. List 5 short term career goals, describe how to accomplish the goals, and include dates for completion.
2. List 2 long term career goals, describe how to accomplish the goals, and include dates for completion.

COMPETENCY 2: Using Labor Market Information

Have program applicant complete Parts 1 and 2 of the Mastery Test for Job Seeking Skills.

COMPETENCY 3: Preparing Resumes

Use the Resume Rating Scale to evaluate a resume provided by the applicant.

OR

Ask the applicant to make a handwritten draft of a resume and evaluate it using the Resume Rating Scale.

COMPETENCY 4: Filling Out Applications

Use the Application Rating Scale to evaluate the entrance application completed by the applicant.

OR

Ask the applicant to complete a sample job application and evaluate it using the Application Rating Scale.

Competency 5: Interviewing

Use the Interview Rating Scale to evaluate the applicant's performance when applying to enter the program.

COMPETENCY 6: Being Consistently Punctual

** Must assume lack of competency at program entry if reliable information is not available.

COMPETENCY 7: Maintaining Regular Attendance

** Must assume lack of competency at program entry if reliable information is not available.

COMPETENCY 8: Demonstrating Positive Attitudes/Behavior

** Must assume lack of competency at program entry if reliable information is not available.

COMPETENCY 9: Presenting Appropriate Appearance

1. Use Appearance Rating Scale to evaluate applicant appearance during application to program.

2. Ask applicant to describe appropriate appearance for work and for an interview.

COMPETENCY 10: Exhibiting Good Interpersonal Skills

Use Interpersonal Skills Rating Scale to evaluate applicant during application to program.

COMPETENCY 11: Completing Tasks Effectively

** Must assume lack of competency at program entry if reliable information is not available.

POST-TEST

COMPETENCY 1: Making Career Decisions

Trainee described 5 short term career goals, how to accomplish the goals, and identified dates for completion.

Trainee described 2 long term career goals, how to accomplish the goals, and identified dates for completion.

COMPETENCY 2: Using Labor Market Information

Trainee used the newspaper, acquaintances, or yellow pages to locate possible jobs.

Trainee can identify at least 5 sources for jobs.

COMPETENCY 3: Preparing Resumes

Trainee developed a resume and received satisfactory scores on the Resume Rating Scale.

COMPETENCY 4: Filling Out Applications

Trainee completed a sample job application and received satisfactory scores on the Application Rating Scale.

COMPETENCY 5: Interviewing

Trainee completed mock interview and received satisfactory scores on the Interview Rating Scale.

COMPETENCY 6: Being Consistently Punctual

Trainee was on time for training sessions 90% of the time.

COMPETENCY 7: Maintaining Regular Attendance

Trainee attended sessions regularly and telephoned prior to class if he/she missed a session.

COMPETENCY 8: Demonstrating Positive Attitudes/Behavior

Based on performance in training sessions, the trainee received satisfactory scores on the Work Maturity Rating Scale.

COMPETENCY 9: Presenting Appropriate Appearance

Trainee consistently received satisfactory scores on the Appearance Rating Scale.

Trainee can describe appropriate appearance for work and for an interview.

COMPETENCY 10: Exhibiting Good Interpersonal Skills

Trainee consistently received satisfactory scores on the Interpersonal Skills Rating Scale.

Trainee can describe appropriate interpersonal behaviors to exhibit on the job.

COMPETENCY 11: Completing Tasks Effectively

Based upon performance in training sessions, trainee received satisfactory scores on the applicable items (4,5,6,7) of the Work Maturity Rating Scale.

COMPETENCY SUMMARY SHEET

Competency	Pre-test (Date:)	Post-test (Date:)
1. Making Career Decisions		
2. Using Labor Market Information		
3. Preparing Resumes		
4. Filling Out Applications		
5. Interviewing		
6. Being Consistently Punctual	**	
7. Maintaining Regular Attendance	**	
8. Demonstrating Positive Attitude/Behavior	**	
9. Presenting Appropriate Appearance		
10. Exhibiting Good Interpersonal Skills		
11. Completing Tasks Effectively	**	

** Must assume lack of competency at program entry if reliable information is not available.

from Missouri Dept. of Elementary and Secondary Education, Div. of Career & Adult Education

170-C

Personal Characteristics and Indicators
(Observable in the Classroom)

Directions: This form may be used as a guide to facilitate completion and rating of the Personal Characteristics component of Employability Competencies. These indicators are included to clarify the five personal characteristics listed. Evaluate the student by checking the appropriate box to indicate the degree of competency. The rating should be based on your observation of the student rather than grades given in class.

Rating Scale: 3 Above Average; 2 Average; 1 Below Average

10/87

3 2 1

1. Relations with Others

a. Interacts with others in a courteous and tactful manner
  - Sets a good example for other students
  - Is calm when discussing problems when appropriate
  - Does not interrupt others when speaking when appropriate
  - Respects opinions of others by not being critical of them when appropriate
  - Is tactful when criticizing the performance of others

b. Gives help and encouragement to other students, as needed
  - Volunteers to help when there is a crisis or heavy work load
  - Shows patience when helping others

c. Exhibits a sense of humor/ability to laugh

d. Cooperates with others
  - Works well in a team
  - Does fair share of the work
  - Participates willingly
  - Makes an effort to resolve conflicts when appropriate
  - Does not distract or annoy others
  - Demonstrates stability and self-control in difficult situations

e. Accepts individual differences
  - Works well with people of various cultural and ethnic backgrounds
  - Works well with people having special needs (i.e. handicapped, disadvantaged, etc.)

f. Respects the property of others

3 2 1

2. Dependability

a. Attends class regularly
  - Notifies appropriate individuals if unable to attend class/special activities

b. Shows up for class/work on time and is prepared to work

3 2 1

c. Completes assigned tasks on time

d. Follows oral instructions willingly

e. Follows written instructions willingly

f. Works without supervision
  - Begins new tasks without being told
  - Makes independent decisions when appropriate
  - Accepts responsibility for job and follows through
  - Ability to work independently when appropriate

g. Demonstrates honesty/accepts responsibility for personal actions

3 2 1

3. Work Habits

a. Asks for help when needed

b. Accepts new challenges
  - Sets goals and works to achieve them
  - Is willing to learn about new methods and techniques

c. Accepts supervision willingly
  - Uses time productively while waiting for directions from supervisor(s)
  - Performs duties with a minimum of supervision
  - Responds positively to suggestions for improvement

d. Adapts to change/demonstrates flexibility
  - Demonstrates creative problem solving approaches when needed to complete the job
  - Adapts to changes in rules, procedures, and situations

e. Stays with task until completed
  - Completes assignment without complaint
  - Works without being easily distracted

f. Manages time effectively
  - Plans and organizes work to make best use of time
  - Accomplishes tasks on schedule

3 2 1

g. Follows safety rules and regulations in the classroom and shop
  - Is careful not to endanger the safety of others
  - Follows appropriate safety regulations
  - Wears proper safety apparel
  - Uses and stores tools and equipment properly
  - Maintains a clean work area

h. Follows classroom and shop rules and regulations

i. Produces quality work
  - Works accurately
  - Shows pride in work

j. Conserves materials and supplies

3 2 1

4. Communications

a. Uses effective communication skills
  - Demonstrates good listening skills by exhibiting appropriate response
  - Organizes thoughts and clearly expresses point of view in a group
  - Organizes thoughts and writes clearly using correct grammar

b. Takes part in class discussion

c. Demonstrates positive body language (i.e. gestures, facial expressions, and eye contact)

d. Greets people in appropriate manner

3 2 1

5. Personal Hygiene/Grooming

a. Keeps hair clean and neatly groomed

b. Uses cosmetics and toiletries appropriately

c. Maintains a clean and well-groomed body

d. Uses good health practices

e. Dresses appropriately for job/school

Missouri Department of Elementary and Secondary Education, Div. of Career & Adult Education

Employability Competencies

Personal Characteristics

Directions: Rate the student by checking the appropriate number on each scale. The ratings should be based on your **observation of the student** rather than grades given in class

Rating Scale:
3 Above Average
2 Average
1 Below Average

3	2	1	Personal Characteristics
☐	☐	☐	1. RELATIONS WITH OTHERS (effectiveness in working with students, instructors, and others, cooperation, shows respect)
☐	☐	☐	2. DEPENDABILITY (attendance, punctuality, adherence to schedules and deadlines; consistency and results, perserverance)
☐	☐	☐	3. WORK ATTITUDES (willingness to learn; willingness to accept and profit from evaluation, enthusiasm; initiative, commitment; pride in work)
☐	☐	☐	4. COMMUNICATION (listening, speaking, and nonverbal skills, effectiveness in communicating with students, teachers, and others)
☐	☐	☐	5. PERSONAL HYGIENE-GROOMING (personal health care and cleanliness, dresses and maintains self appropriately)
			OTHERS (specify):
☐	☐	☐	______________________
☐	☐	☐	______________________
☐	☐	☐	______________________

Job Seeking Techniques

Directions: Evaluate the student by checking the appropriate number or letter to indicate the degree of competency. The rating for each task should reflect **employability readiness** rather than the grades given in class.

Rating Scale:
3 Mastered
2 Requires Supervision
1 Not Mastered
N No Exposure

3	2	1	N	Job Seeking Techniques
☐	☐	☐	☐	1. Apply information about self and job opportunities in career decision making
☐	☐	☐	☐	2. Write a resume
☐	☐	☐	☐	3. Prepare a job application form
☐	☐	☐	☐	4. Write letters of application and acceptance
☐	☐	☐	☐	5. Arrange for personal references
☐	☐	☐	☐	6. Apply job search techniques
☐	☐	☐	☐	7. Arrange a job interview
☐	☐	☐	☐	8. Apply job interview techniques
☐	☐	☐	☐	9. Evaluate job offers (actual or simulated)
				Others (specify):
☐	☐	☐	☐	______________________
☐	☐	☐	☐	______________________
☐	☐	☐	☐	______________________

Entrepreneurship Awareness

Directions: Evaluate the student by checking the appropriate number or letter to indicate the degree of competency. The rating for each task should reflect **employability readiness** rather than the grades given in class.

Rating Scale:
3 Mastered
2 Requires Supervision
1 Not Mastered
N No Exposure

3	2	1	N	Entrepreneurship Awareness
☐	☐	☐	☐	1. Describe five characteristics of a free enterprise economic system (ownership of property, profit motive, risk taking, competition, supply and demand)
☐	☐	☐	☐	2. Name four forms of business ownership (sole proprietorship, partnership, corporation, cooperative)
☐	☐	☐	☐	3. Describe advantages and disadvantages of small business ownership
☐	☐	☐	☐	4. Identify steps necessary to start a business (evaluate need, site selection, marketing plan, financial plan, management plan)
☐	☐	☐	☐	5. Identify business opportunities related to training
☐	☐	☐	☐	6. Identify personal traits of the entrepreneur (versatility, aspirations, energy, integrity, adaptability, etc)
				Others (specify):
☐	☐	☐	☐	______________________
☐	☐	☐	☐	______________________
☐	☐	☐	☐	______________________

ECS ASSESSMENT CHECKLIST **
JTPA Participants

Participant's Name____________________

Date____________________

Staff Person's Name____________________

	Participant meets minimum Competency Attainment Level		Date Certified
A. BASIC SKILLS		Reading/Math for Employability Scores	
ECS Appraisal Reading Score______	Yes ☐ No ☐	Pre-test______Post-test______	
ECS Appraisal Math Score ______	Yes ☐ No ☐	Pre-test______Post-test______	
B. PRE-EMPLOYMENT			
1. Making Career Decisions * (attachment A) *(used during intake)*	Yes ☐ No ☐	Post-test - Interest/Aptitude Name ______________	
2. Using Labor Market Information * (attachment A) *(used during intake)*	Yes ☐ No ☐	Post-test - Job Search Checklist (attachment B)	
3. Preparing Resumes * (attachment C) *(used after intake)*	Yes ☐ No ☐	Comments:	
4. Filling Out Applications * (attachment D) *(used after intake)*	Yes ☐ No ☐		
5. Interviewing * (attachment E) *(used after intake)*	Yes ☐ No ☐		
6. Writing Cover Letter (attachment F) *(used after intake)*	Yes ☐ No ☐		
WORK MATURITY Work Maturity Checklist (attachment G) (#'s in parentheses refer to question(s) which address each Department of Labor competency category)			
7. Being Consistently Punctual * (#1)	Yes ☐ No ☐	Comments:	
8. Maintaining Regular Attendance * (#2-3)	Yes ☐ No ☐		
9. Exhibiting Good Interpersonal * Relations (#4-9)	Yes ☐ No ☐		
10. Demonstrating Positive Attitudes/ Behaviors * (#10-15)	Yes ☐ No ☐		
11. Presenting Appropriate Appearance * (#16-17)	Yes ☐ No ☐		
12. Completing Tasks Effectively * (#18-22)	Yes ☐ No ☐		
C. JOB SPECIFIC Job Training/Experience Checklist (attachment H)	Yes ☐ No ☐		

** The ECS Assessment Checklist for JTPA Participants is to be used in conjunction with an Educational/Employment Development Plan. (EEDP)

* The Department of Labor requires assessment for the eleven starred competency areas.

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Strategy 4: Job-Readiness Training (JRT)

Target Group
16- to 19-year-olds, in or out of school.

Rationale

Job-readiness training addresses the basic capabilities needed to get a job, keep it and use it to negotiate a better one. Young people with little or no work experience, whether in or out of school, need knowledge and experience in how and where to look for a job, how to compete for it through an application and interview, and how to meet the demands and expectations of employers. Youth who have not developed these skills through early job experiences can be helped to gain access to jobs through job-readiness training. This strategy is valuable for in-school youth who are preparing for summer or part-time jobs, for senior high school students planning to enter the labor market upon graduation and for young dropouts.

The Department of Labor has defined 11 core competencies that reflect attainment of competency in areas of pre-employment skills and work maturity. These are listed in Appendix D.

Job-readiness training is designed to meet pre-employment and work maturity competencies. The measurement of these competencies is most often tied directly to JRT program components, and to youth performance or employability development plans. More comprehensive programs for out-of-school youth will link this strategy to other training, education (most often basic skills) and support services activities. The essence of JRT, however, is preparation for and placement in an entry-level job.

Research has shown that JRT programs can help at-risk youth take a first step into the job market, though their chances of employment do not seem to last unless they are reinforced by further training and support.[27]

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Strategy Elements

A basic program or curriculum focusing on job-readiness training will include the following:

- Assessment of individual interests and aptitudes for different types of work.
- Job search techniques: where to look for and how to access job opportunities.
- Preparing job applications: using them as a sales tool.
- Preparing a resume or personal profile.
- Interviewing skills.
- Meeting the demands and expectations of an employer.
- Job placement and follow-up.

Effective delivery of such a program requires the following:

- A training period of from one to four weeks, depending on the intensity of instruction and individual needs.
- Flexible staff with expertise in vocational counseling, educational services and job development.
- Small group and individual instruction as needed.
- Individual employability plans with competency measurements.
- A large network of employers willing to hire youth and give appropriate supervision.
- Emphasis on matching individuals to jobs and not vice versa.
- Linkage with or provision of other training and/or educational activities, and support services as needed.
- Post-placement support services for both youth and employers.

Programming Options

JRT services for out-of-school youth are generally provided by community-based organizations and educational institutions. Services for in-school youth may be provided as part of career awareness and/or job-readiness activities that are accessible to all students in the senior high school. At-risk students may be targeted in such efforts, or may be enrolled in alternative education programs or special assistance programs in their high schools (e.g., Philadelphia High School Academies).

Costs

Costs range widely, depending upon the type of services provided. A full-service program for out-of-school students runs about $1000 to $2000 per placement. In-school programs vary, depending upon the size of the program, the allocation of additional staff, resource materials, and job development activities.

Program Examples

- Jobs for Youth, Inc. (JFY)
- 70001 Training and Employment Institute

70001 Training and Employment Institute

Strategy 4 Program Example

Target Group
Primarily out-of-school dropouts ages 16-21, economically disadvantaged; some applications to in-school youth and adults.

Numbers Served
125 associates per program per year, on average.

Costs
Approximately $2,000 per placement, $1,600 per positive termination.

Overview

The 70001 program model is designed to prepare disadvantaged out-of-school young people for jobs. It is a three-prong approach, providing education, pre-employment training and motivational activities through an organization known as the 70001 Career Association (SEVCA). 70001 became an independent nonprofit corporation in 1976 and received funding from the U.S. Department of Labor to begin nationwide expansion. There is a network of over 60 programs that offer youth an organized sequence of educational and pre-employment training, under the guidance of the 70001 national office, using a standard 70001 job-readiness training curriculum. Approximately 10 percent of the participants are in-school youth. The model has been applied to adults, juvenile offenders and welfare participants, and has also been geared to specific industries such as banking and retail trade.

The 70001 program is described as individually self-paced, using competency-based performance indicators. Individual and small group sessions are provided in each of the component areas. Participants are generally in the program an average of two to five weeks prior to job placement.

Program Components

- *Testing and assessment* in the following areas:
  - *Education,* using the Test of Adult Basic Education (TABE)
  - *Job-readiness,* using the 70001 Job-Readiness Assessment for life skills and pre-employment training needs
  - *Career interest,* using a variety of locally determined tests.
- *Instruction*
  - *Education:* Preparation may be remedial (for youth seriously deficient in reading and math) or specifically aimed at preparing youth for a General Equivalency Diploma (GED); the Comprehensive Competencies Program (CCP) system is used in approximately 20 percent of the 70001 programs.
  - *Job-readiness:* A standardized 70001 Job-Readiness Training curriculum consists of a 60-hour competency-based, minimum skills progression that focuses on preparation for entry into the labor market. Instruction includes identifying and responding to job openings, grooming and proper dress, filling out job applications and meeting workplace requirements such as punctuality, proper attitudes and courtesy.
- *Job placement:* Participants who complete pre-employment training are placed in entry level jobs averaging $3.65 per hour. 70001 staff identify the prospective employer and prepare the youth for the job interview.
- *Post-placement services:* Post-placement contact is made with youth and employers in order to address any early problems. Post-placement educational and employment counseling is available, as is membership in the youth organization.

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Performance (1987)

- Placement rate is 68 percent and the positive termination rate is 86 percent.
- Of the participants eligible to receive a GED (varies by state), 67 percent received it.
- Past research found that, compared to a control group, male participants evidence short-term earnings gains that pay back the cost of the program (in terms of increased earnings over a control group) in a year. Females experience modest short-term gains in earnings but do not sustain these gains long enough to "pay back" their program costs. There was no evidence of long-term gains.

Administration

A central office, consisting of 45 to 50 staff, supports each local program by providing technical assistance, staff training, the 70001 testing and curriculum guide for job-readiness training, and promotional materials. 70001 programs are most often administered locally through schools, youth agencies and community-based organizations in an "affiliate" contract arrangement. The national office directly administers 14 programs.

Funding

The overall 70001 operation, including the national headquarters and affiliate network, is supported by approximately $8 million annually. This includes $2.3 million for the national office administration, about half of which comes from the Department of Labor. Private fundraising and foundations make up the rest. Local program budgets range from $150,000 to $200,000. They are funded almost entirely by local JTPA allocations, with some support generated from local or state education, foundation or corporate dollars.

References

America's Critical Choice. 1987 Corporate Report, Washington, DC: 70001 Training and Employment Institute.

Lah, D., et al. *Longer Term Impact of Pre-Employment Services on the Employment and Earnings of Disadvantaged Youth.* Philadelphia: Public/Private Ventures, May 1983.

Contact

Larry Brown, President
600 Maryland Avenue, SW
West Wing, Suite 300
Washington, DC 20024
202.484.0103

Appendix B: Resources for Youth Employment Programs

Organizations

Center for Human Resources (CHR) Brandeis University, The Heller Graduate School, South Street, Waltham, MA 02254, (800) 343-4705

CHR is a national youth employment clearinghouse with information on exemplary program approaches and research. It provides assistance to a wide audience of policy-makers and practitioners on "what works" in youth programming, based on research in the field. The center's activities include the Youth Employment Information Clearinghouse, the National Youth Practitioner's Network, the Urban Network Project, and the Career Beginnings Program.

Manpower Demonstration Research Corporation (MDRC), Three Park Avenue, New York, NY 10016, (212) 532-3200

MDRC is a nonprofit organization established in 1974 to conduct evaluations and demonstration programs in areas of social policy. The demonstration programs test innovative approaches to increasing the long-term self-sufficiency of actual or potential recipients of public assistance or other government-funded benefits. Its research focused on youth has included the recent Jobstart demonstration project, the National Supported Work Demonstration, Project Redirection for teen parents, Youth Entitlement Demonstration, Comprehensive Opportunities Project, and Structured Training and Employment Transitional Services (STETS) for mentally retarded youth.

Center for Remediation Design, 1015 15th Street, NW, 6th Floor, Washington, DC 20005, (202) 223-5640.

Jointly sponsored by the National Job Training Partnership, National Association of Private Industry Councils, U.S. Conference of Mayors, National Alliance of Business, and the National Association of Counties, the purpose of the center is to provide assistance to local SDAs and others in developing quality remedial education designs in programs for high-risk youth.

National Youth Employment Coalition (NYEC), 1501 Broadway, Room 1111, New York, NY 10036, (212) 840-1801

Composed of the major youth-serving and research organizations, the Coalition provides a forum for networking, information-sharing, legislative and policy discussion and recommendations as appropriate, for organizations that are for the most part competitors in the employment and training arena.

National Alliance of Business, 1015 15th Street, NW, Washington, DC 20005, (202) 289-2910

The Alliance is a business-led, nonprofit corporation established in 1968 to increase private sector training and job opportunities for the disadvantaged and unemployed through public/private partnerships. The Alliance has a history of working with PICs and SDAs in the summer youth programs, and has been involved in assisting interested cities in developing formal business/education collaboratives. The Alliance provides technical assistance through its national office or one of seven regional offices.

Jobs for America's Graduates (JAG), 1250 Eye Street, NW, Suite 303 Washington, DC 20005, (202) 842-4196

Jobs for America's Graduates is a national school-to-work transition program which began in 1980 to provide services to students who had no formal plans for continuing education or training upon graduation and were identified as at risk. JAG currently operates in 50 communities in 14 states. Its objective is to provide job-readiness services to youth through competency-based instruction and an in-school Career Association in order to help students make the transition successfully to work, postsecondary education or military service upon graduation.

70001 Training and Employment Institute, Ltd., 600 Maryland Avenue, SW, Room 500, Washington, DC 20560, (202) 484-0103

See program description on page 42.

Public/Private Ventures (P/PV), 399 Market Street, Philadelphia, PA 19106, (215) 592-9099.

P/PV is a not-for-profit corporation that designs, manages and evaluates social policy initiatives to help young people, especially the hard to serve, become productively employed and self-sufficient. P/PV works with schools, government, employment and training organizations, community-based agencies, foundations and business to find more effective approaches to education, training and employment.

Youth Service America, 810 18th Street, NW, Suite 705, Washington, DC 20006, (202) 783-8855.

A nonprofit organization that serves as an advocate for the national promotion of youth service, YSA also provides technical assistance to existing and emerging youth service programs, provides information and policy guidance for various youth service programs, and publishes *Streams*, a newsletter reporting on national news, trends and information across the youth service field.

Cities-In-Schools (CIS), 1023 15th Street, NW, Suite 600, Washington, DC 20005. (202) 861-0230.

Cities-In-Schools is a national nonprofit corporation established in 1977, following the success of the Rich's Academy program in Atlanta which coordinated needed services for at-risk youth through the public schools. Operating in 23 cities nationwide, the CIS model uses the in-school or alternative school environment to integrate community resources, services and business involvement for at-risk youth and their families.

Publications

The Youth Labor Market Problem: Its Nature, Causes and Consequences. Richard B. Freeman and David Wise, eds. Chicago: University of Chicago Press, 1982.

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A Fisherman's Guide: An Assessment of Training and Remediation Strategies. Robert Taggart. Kalamazoo, Mich.: The W.E. Upjohn Institute for Employment Research, 1981.

Improving Youth Employment Prospects: Issues and Options. Washington DC: Congressional Budget Office, February 1982.

Lessons from Youth Programs. Monograph Series. Salt Lake City: Olympus Publishing Company, 1982.

Risking the Future: Adolescent Sexuality, Pregnancy and Childbearing. Cheryl D. Hayes, ed. Washington, DC: National Academy Press, 1987.

What Works in Youth Employment Policy? Andrew Hahn and Robert Lerman. Washington, DC: Committee on New American Realities, National Planning Association, 1985.

Youth Employment and Training Programs: The YEDPA Years. Charles Betsey, Robinson Hollister and Mary Papageorgiou, eds. National Research Council. Washington, DC: National Academy Press, 1985.

American Youth: A Statistical Snapshot. James R. Wetzel. Washington, DC: William T. Grant Foundation, Youth and America's Future, June 1987.

One-Fifth of the Nation's Teenagers: Employment Problems of Poor Youth in America, 1981-1985. Andrew Sum, Paul Harrington and Bill Goedicke. Boston: Center for Labor Market Studies, Northeastern University, 1986.

Youth and the Workplace: Second Chance Programs and the Hard-to-Employ. Thomas J. Smith, Gary Walker and Rachel Baker. Philadelphia: Public/Private Ventures, March 1987.

Excerpt from Work and Education: Strategies for Success, by Lori Strumpf, Center for Remediation Design

Introduction

National policy makers have spent the last year discussing the scope of the illiteracy problem in America and the potential effect of illiteracy on our competitive place in the world economy. Employment and training policymakers frequently ask whose job it is to educate our young people, the employment and training system or the education system? Given the nature of the problem, the question can no longer be "whose job is it?" It has become apparent that one system alone may not be able to adequately respond to those most at risk. However, collaborative efforts among institutions have proven effective in identifying those at risk and in developing strategies to assist them.

- Why is the lack of basic skills among the nation's youth an economic issue; and

- What role can and should employment and training play in increasing basic skills among youth.

Defining the Problem

The profile of the American work force is changing. Labor market demand is changing. By the turn of the century, if current economic forecasts hold, there will be more jobs available than workers to fill them. Furthermore, while the number of young adults entering the work force is decreasing, a growing percentage of these new workers will lack the basic skills required to fit into available jobs.

As the number of jobs in the service industry continues to increase, the nature of entry level employment is taking on new dimensions. No longer can industry afford employees who cannot read, write, communicate and process information. Employer surveys clearly show that employers view these basic skills as necessary to an individual's ability to get and keep a job.

However, a mismatch between the jobs available and the skills potential employees bring to those jobs is growing at an alarming rate. The U.S. Department of Education estimates that the number of functional illiterates (those reading between a fourth and eight grade level) grows by 2.3 million every year--including 850,000 high school dropouts and another 150,000 "pushouts" who graduate with inadequate reading and writing skills. The public schools remain avenues to literacy in this country for many Americans, yet it is apparent that the schools lack the ability to motivate a certain type of student--those with a high risk of dropping out. The National

Education Association predicts that 1 out of every 4 students entering the eight grade in 1986 will not complete high school. Research indicates that many factors play a role in whether a young person will drop out of school including:

- academic history;
- survival factors (marriage, pregnancy, etc.);
- social factors (incarceration; drug dependency, etc.); and
- environmental factors (socioeconomic status, home support, etc.)

Lack of adequate basic skills is not only a middle school and high school dilemma. It effects institutions of higher education as well. Of nearly 1,400 colleges and universities surveyed recently, 84% had established "developmental studies" programs for remedial reading, math and writing skills. Furthermore, this lack of basic skills adds up to substantial monetary investment by industry to teach remedial reading, writing, and math.

This problem threatens the economic health of our society over the next 20 years. The number of youth (14-24) that will make up the labor force is dwindling in absolute numbers. The number of minorities, women, and immigrants (14-24) is increasing. Minorities are disproportionately represented within the dropout population. Being a high school dropout decreases job opportunities. Being poor--as is 1 out of 5 of this nation's youth-- increases the likelihood of dropping out. These same young adults will make up the labor force in the near future, yet right now they take the least advantage of educational opportunities and have little access to work opportunities which teach the skills necessary for productive employment.

Over the past year both Congress and the Department of Labor have articulated their concerns about the basic skills deficiencies among the nation's youth and the economic threat this lack of basic skills poses to the country. The Congress and the U.S. Department of Labor have been searching for policies and programs which will assist the employment and training system to carve out a role in addressing the problem.

For the employment and training community to find productive avenues for local involvement in addressing the problem of literacy--the scope of the discussion should be narrowed from literacy to remediation. What's the difference? The call for literacy enhancement is a broad educational directive under which all community strategies to attack basic skills deficiencies ought to emanate. However, literacy is too broad a goal for employment and training to handle alone. Under this broad mandate, many programs take shape-- from Headstart programs for pre-schoolers to programs which bring non-readers to a functioning reading level. Remediation on the other hand focuses on correcting or improving one's skills. The job training system is designed to improve or correct skill levels for the purposes of getting and keeping a job.

In the context of job training, what is meant by basic skills remediation? When employers tell educators and job training practioners that basic skills are necessary to get and keep jobs, they are saying that basic skills are a pre-employment/work maturity skill. As defined by locally developed youth employment competency systems, pre-employment/work maturity skills are "those skills necessary to get and keep entry level jobs" including filling out applications, being on time and having a good attitude.

By addressing basic skills as a pre-employment and work maturity skill, employers are identifying a functional gap between what young people learn in school and how these skills apply to the workplace. The employment and training system can provide functional basic skills as part of the solution to a complex problem.

A recent study by the National Assessment of Educational Progress helps to define the functional gap. In this study of 21-25 year olds, the initial news was good. The study found that 95% of all 21-25 year olds can read and understand the printed word at a fourth grade level, and 80% meet or exceed the 8th grade level. However, less than 50% can understand complex material.

What is meant by complex material? In this study literacy is defined as using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential. This definition implies an ability to do something rather than knowledge of something.

Authors of The Subtle Danger, a thoughtful analysis of the facts presented in the NAEP study, tells us that literacy in and of itself is a functional skill, requiring the application of various skills in common, everyday situations. They conclude that the "literacy skill levels found in the NAEP survey are not adequate, on average, for maintaining world leadership in a changing, technological society at the end of the twentieth century." What the survey found and the analysis illuminates is quite simply that most young people can perform simple information searches and direct entry of information on a form. But when the very same youth functioning at a high level on simple tasks are asked to perform multi-step processes, for example--computing the change that would be received from $3.00 for two items ordered

Excerpt from Work and Education: Strategies for Success, by Lori Strumpf, Center for Remediation Design

from a lunch menu--performance declines. The solution to the above problem requires multiple steps--finding the two items, adding them up and subtracting from $3.00. Only 56.4 percent did this correctly.

In The Subtle Danger the author's conclusions help to further identify the role for an employment and training system. They identify that "long term programs that focus on critical reading/thinking skills, but skills different from those now emphasized in elementary and secondary reading programs and in job specific occupational training are needed to remedy the situation."

Review of Principle Findings on Programs to Improve the Employability of Youth

- To be effective for disadvantaged youth work experience must be combined with remedial education and skills training. Work experience alone does not improve the long-term employment potential of young people;

- Remedial education and skills training can clearly be effective in improving the skills and the employability of young dropouts if delivered in a residential, intensive, highly structured environment such as offered by the Job Corps. In nonresidential contexts, results are less consistent but appear to be positive.

- Providing subsidized jobs to poor youth on the condition that they remain in or return to school has some positive effects on both school attendance and postprogram employment of participants, but not on the share graduating from high school--the dropouts drop out again.

- Efforts to change the work attitudes, habits, appearances and so forth of disadvantaged youth have had some success, but these "successes" have not had much effect on the employment of the young participants.

EXHIBIT E1

HIERARCHAL OBJECTIVES
BASIC SKILLS INTEGRATED AT EACH LEVEL
OF EMPLOYABILITY DEVELOPMENT

	READING	WRITING	MATH

ADVANCED	• *Use Textbook and Reference Materials*
	• *Read Consumer Info*
	• *Interpret Forms*
		• *Write Composition*
		• *Identify Study Skills and Test Taking Skills*
			• *Identify Decimals*
			• *Add Decimals*
			• *Subtract Decimals*
			• *Multiply Decimals*
			• *Divide Decimals*
			• *Calculate Percent of Numbers*
			• *Read Graduated Scale*
			• *Solve Problems Using*
			  • *Linear Measure*
			  • *Area Measure*
			  • *Volume Measure*
			• *Use Calculator*

INTERMEDIATE	• *Gain Information from Newspapers and Magazines* • *Use the Telephone Book as Info Source* • *Read & Write: Day, Months and Time of Day*	• *Write Resume and Cover Letter* • *Complete Forms, i.e., Job Application* • *Write Sentences* • *Construct Paragraphs*	• *Multiply Whole Numbers* • *Divide Whole Numbers* • *Solve Word Problems Using Whole Numbers* • *Identify Fractions* • *Add Fractions* • *Subtract Fractions* • *Multiply Fractions* • *Divide Fractions*
BASIC LEVEL	• *Interpret Signs & Labels* • *Follow Directions in Order* • *Use a Road/Street Map* • *Use a Dictionary* • *Use a Library*	• *Record Personal Info for Self and Others* • *Write Messages and Reports*	• *Identify Whole Numbers* • *Add Whole Numbers* • *Subtract Whole Numbers* • *Identify Amounts of Money*

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CASAS
Appendix B

CASAS

Comprehensive Adult Student Assessment System

OVERVIEW

CASAS is a comprehensive educational assessment and curriculum management system designed to measure the identified competencies of local educational programs for all levels of Adult Basic Education and English as a Second Language, including pre-employment curriculum. This nationally validated program, a part of the National Diffusion Network, was developed to meet five major goals:

1. To provide effective assessment materials and procedures for correct placement of students into educational and training programs from beginning through advanced levels of ABE, ESL, and employment training programs.
2. To measure student achievement in a competency-based program.
3. To target day-to-day relevant instruction.
4. To certify attainment of competencies for movement of students into higher program levels and for local certification programs.
5. To provide curriculum and assessment materials and procedures that are adaptable to a variety of educational settings and are linked to the competency-based curriculum goals and instructional programs.

These goals were achieved through the cooperative planning and development activities of CASAS, which is a consortium of agencies that provide educational services to adult, and alternative educational programs, coordinated by the CASAS Staff of the San Diego Community College District Foundation in cooperation with the California State Department of Education, Youth, Adult, Alternative Education Services Division. The Consortium includes representatives from adult education agencies, community colleges, community based organizations, correctional institutions, special education and alternative education programs.

Developing a competency-based system based on local agency identified competencies and linked to curriculum and instruction is not an easy task. Many agencies do not have the staff or budget required to construct the items, tests, curriculum linkage and supporting materials needed to provide valid and reliable assessment for their agencies. This cooperative consortium effort provides a comprehensive and built-in adaptability that could not be accomplished efficiently and effectively by one agency alone.

CASAS Competency List

The Consortium has identified a common core of competencies included in ABE and ESL programs. These competencies are revised and updated on a yearly basis by the Consortium. Currently the competency list contains 34 competency areas and 165 competency statements within the general life skills content areas of Consumer Economics, Community Resources, Health, Occupational Knowledge, and Government and Law. An additional 44 statements are included for computational skills. Sources for the competency statements included in this list were adult education projects validated by the JDRP, namely, the Adult Performance Level Project (APL), the External Diploma Program, and the CLASS Project. This list has been further validated and refined by 40 adult education agencies participating in the CASAS Consortium. Vocational training entry basic skills are identified using The Vocational Basic Skill Competency Check List. A statement list of PIC approved competencies in the areas of pre-employment and work maturity is also available.

CASAS Curriculum Index and Matrix

Curriculum materials that include instruction targeted to specific competencies and are appropriate for adult learners have been identified and coded to the CASAS Competency List. The Matrix also identifies the appropriate program and level of instruction. Currently 102 publications are included in the Index and it is updated on a yearly basis.

CASAS Pre-Employment Curriculum Index

To link the pre-vocational assessment procedures with competency-based curricula, CASAS has created a curriculum index which matches each occupational knowledge competency to appropriate materials and program level. The materials referenced in this index were those that met the curriculum standards established by the CASAS Consortium.

CASAS Customized Assessment

The CASAS assessment design includes a bank of more than 4000 items that have been extensively field tested throughout California and other states over a six-year period. Each item is designed to measure a specific competency statement in the CASAS Competency List. Item and test analysis of the field tested items have established a difficulty level for each item so that a student can be tested not only on specific competencies but also on a continuum of difficulty as he/she progresses through the program. This design enables CASAS to provide customized assessment that directly measure program levels. Also by using items from the item bank to design tests, the underlying common achievement scale allows for better articulation among programs and levels. Student achievement can be monitored, as well as group progress because all items have been calibrated on the same continuum scale.

✦ 4.1.4. Identify and use information about training opportunities (see also 2.5.5.)

✦ 4.1.5. Recognize standards of behavior for job interviews and select appropriate questions and responses during job interviews

✧ 4.1.6. Interpret general work-related vocabulary (e.g., experience, swing shift)

4.1.7. Identify appropriate behavior and attitudes for getting a job

✦ 4.1.8. Identify appropriate skills and education for getting a job in various occupational areas

✦ 4.1.9. Identify procedures for career planning including self-assessment

4.2. Understand wages, benefits, and concepts of employee organizations.

4.2.0. Identify the correct picture or appropriate response from oral cues

✦ 4.2.1. Interpret wages, wage deductions, and benefits. including wage informational charts, pamphlets, and forms

4.2.2. Interpret information about employee organizations

✧ 4.2.3. Interpret employment contract and union agreements

✧ 4.2.4. Interpret employee handbooks

4.3. Understand safety standards and procedures in training programs and in the work place.

4.3.0. Identify the correct picture or appropriate response from oral cues

✦ 4.3.1. Interpret safety signs found in places of training, in employment, and in public buildings

✦ 4.3.2. Interpret work safety manuals and related publications

4.3.3. Identify safe work procedures including wearing safe work attire

✦ 4.3.4. Identify procedures for reporting training and job related hazards, accidents, injuries, and damages

4.4. Understand materials and concepts related to job training, employment, keeping a job and getting a promotion.

4.4.0 Identify the correct picture or appropriate response from oral cues

✦ 4.4.1 Identify appropriate behavior, attitudes, and social interaction for keeping a job and getting a promotion

✧ - Basic Skill Competency for Employability
✦ - Pre-employment/Work Maturity Competency and Basic Skill Competency for Employability

4.1.3 Identify and use sources of information about job opportunities such as job descriptions and job ads.

PROGRAM	LEVEL	ADDISON-WESLEY PUBLISHING COMPANY South Street, Reading, MA 01867 1-800-223-3323
ESL	A/B	Lifeskills 1. DeFilippo, Judy and Walker, Michael. Reading, Massachusetts. 1982. (2-6)
		ALEMANY PRESS, A DIVISION OF JANUS BOOK PUBLISHERS, INC. 2501 Industrial Parkway West, Hayward, CA 94545 (415) 887-7070, 1-800-227-2375
ESL	A	Everyday English, Volume 1. Schurer, Linda, ed. Hayward, California 1979. (8)
ESL	A	Everyday English, Volume 2A. Schurer, Linda, ed. Hayward, California 1979. (8)
		CAMBRIDGE BOOK COMPANY, PRENTICE HALL REGENTS CAMBRIDGE ADULT EDUCATION 4700 S. 5400 W., Salt Lake City, UT 84118 (States east of Mississippi): 1-800-223-1360 (States west of Mississippi): 1-800-225-7162
ABE	B/C	**Follett Coping Skills Series** Using Community Resources. McVey & Associates. New York, New York. 1977. (2) Finding Work. McVey & Associates. New York, New York. 1977. (1)

York. 1985. Accompanies videotape and User's Manual.

Sample *CASAS* Test Items

Reading

DIRECTIONS: Read the following job ads to answer the next three questions.

PLUMBERS
Exp. plumbers needed for lrge growing repair & remodeling plumbing company. West LA area. Top Salary, Excellent advance. Opportunity with many benefits for job security incl. profit sharing. Refs required.
Call (213) 478-5017.

RECEPTIONIST/TYPIST
Must be fluent in English, good voice and manner. Typing 40 words per minute. Qualified applicants only need apply. Call Mr. Baron (213) 938-7151.

HOTEL
STEWARD LEADPERSON
Needed to help supervise kitchen utility crew. Kitchen and some supervisory experience necessary. Bi-lingual (Eng/Span). Advancement opportunity. Apply Personnel Office, 9-12 noon, Mon-Thurs. S/S card required.
SHEARATON UNIVERSAL HOTEL
(Lankershim at Ventura,
N. Hollywood)

GENERAL OFFICE
Full/part time. Good w/figures/details >50 wpm, ben. J.F. (213) 385-3921.

SAMPLE

9. In the General Office ad, what kind of work is available?

   A. Full-time work
   B. Part-time work
   C. Either full- or part-time work
   D. Temporary work

10. Which ad requires references?

    A. Plumbers
    B. Hotel Steward Leadperson
    C. Receptionist/Typist
    D. General Office

11. What is the minimum typing speed required for the General Office position?

    A. 40 wpm
    B. 45 wpm
    C. 50 wpm
    D. 55 wpm

Math

DIRECTIONS: Refer to the pay stub to answer the next three questions.

ABLE CONSTRUCTION COMPANY

EMPLOYEE	GROSS PAY	DEDUCTIONS			NET PAY
		Federal	State	FICA	
Carlson, Mary	$268.00	$40.30	$8.04	$21.44	

SAMPLE

3. What percent of Mary Carlson's gross pay goes to the federal government?

   A. 6%
   B. 15%
   C. 26%
   D. 74%

4. What percent of the gross pay is taken out for deductions?

   A. 6%
   B. 15%
   C. 26%
   D. 74%

5. What percent of the paycheck does Mary Carlson get to take home?

   A. 6%
   B. 15%
   C. 26%
   D. 74%

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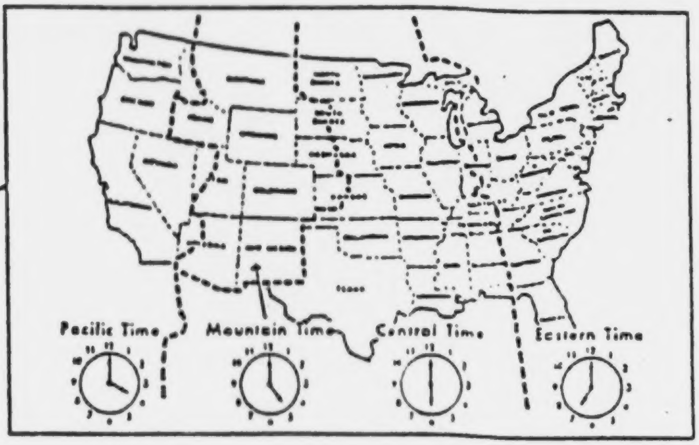
CASAS Scale

250
245
240
235
230
225
220
215
210
205
200
195
190
185
180
175
170
165
160
155
150

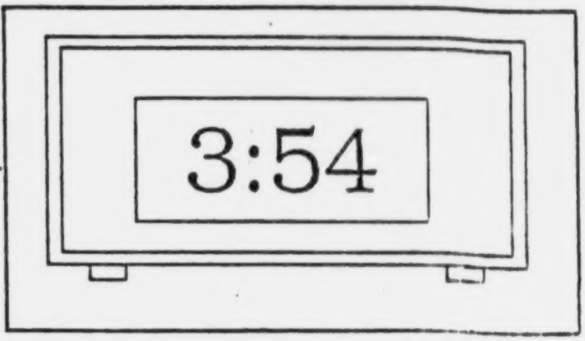
Sample of a **C Level** Item

Directions: Refer to the time zones on the map to answer the next question.


Pacific Time
Mountain Time
Central Time
Eastern Time

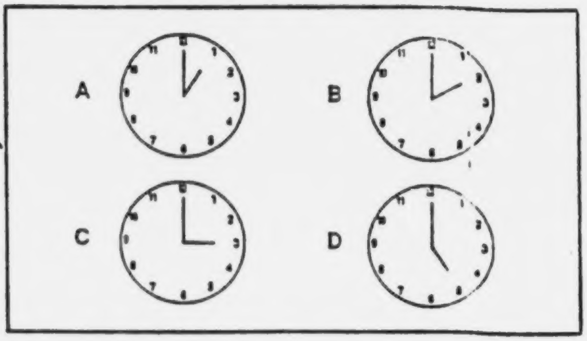
Sample of a **B Level** Item

Directions: Read the clock to answer the next question.



Sample of an **A Level** Item

It's 3:00.



T-13
AIE

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CASAS

READING
for
EMPLOYABILITY
TEST CONTENT BY ITEM
Form 13 - Level B

ITEM	CONTENT AREA*	CODE	TASK**	THE STUDENT WILL BE ABLE TO DEMONSTRATE THE ABILITY TO:
1.	O.K.	4.3.1.	4	Interpret safety signs found in places of training, in employment, and in public buildings
2.	O.K.	4.3.1.	4	Interpret safety signs found in places of training, in employment, and in public buildings
3.	O.K.	4.1.3.	4	Identify job and use sources of information about job opportunities such as job descriptions and job ads
4.	O.K.	4.4.3.	2	Recognize and use occupational signs, charts, forms and written directions
5.	O.K.	4.4.3.	2	Recognize and use occupational signs, charts, forms and written directions
6.	O.K.	4.4.3.	2	Recognize and use occupational signs, charts, forms and written directions
7.	O.K.	4.1.2.	1	Interpret job applications, resumes, and letters of application
8.	O.K.	4.1.2.	1	Interpret job applications, resumes, and letters of application
9.	C.R.	2.5.6.	2	Use library resources, reference materials, content tables, indexes, and dictionaries
10.	C.R.	2.5.6.	2	Use library resources, reference materials, content tables, indexes, and dictionaries
11.	C.R.	2.5.5.	1	Identify educational services and how to use them
12.	C.R.	2.5.5.	1	Identify educational services and how to use them
13.	O.K.	4.3.1.	4	Interpret safety signs found in places of training, in employment, and in public buildings
14.	O.K.	4.3.1.	4	Interpret safety signs found in places of training, in employment, and in public buildings
15.	O.K.	4.1.3.	3	Identify and use sources of information about job opportunities such as job descriptions and job ads
16.	O.K.	4.1.3.	3	Identify and use sources of information about job opportunities such as job descriptions and job ads
17.	O.K.	4.2.3.	3	Interpret employment contracts and union agreements
18.	O.K.	4.2.3.	3	Interpret employment contracts and union agreements
19.	O.K.	4.3.2.	3	Interpret work safety manuals and related publications
20.	O.K.	4.3.2.	3	Interpret work safety manuals and related publications
21.	O.K.	4.3.2.	3	Interpret work safety manuals and related publications
22.	O.K.	4.3.4.	3	Identify procedures for reporting training and job related hazards, accidents, injuries, and damages
23.	O.K.	4.3.4.	3	Identify procedures for reporting training and job related hazards, accidents, injuries, and damages
24.	O.K.	4.3.4.	3	Identify procedures for reporting training and job related hazards, accidents, injuries, and damages
25.	O.K.	4.1.3.	4	Identify and use sources of information about job opportunities such as job descriptions and job ads
26.	O.K.	4.1.3.	4	Identify and use sources of information about job opportunities such as job descriptions and job ads
27.	O.K.	4.1.3.	4	Identify and use sources of information about job opportunities such as job descriptions and job ads
28.	O.K.	4.2.4.	2	Interpret employee handbook
29.	O.K.	4.2.4.	2	Interpret employee handbook
30.	O.K.	4.2.4.	3	Interpret employee handbook
31.	O.K.	4.1.2.	3	Interpret job applications, resumes, and letters of application
32.	O.K.	4.1.2.	3	Interpret job applications, resumes, and letters of application
33.	H.	3.4.3.	3	Interpret procedures for simple first-aid
34.	H.	3.4.3.	3	Interpret procedures for simple first-aid

*C.E. - Consumer Economics; C.R. - Community Resources; H. - Health; O.K. - Occupational Knowledge; G. L. - Government and Law; C. - Computation
**TASK 1) Fill-in-the-blank; 2) Charts, maps, consumer billings, matrices, graphs or tables; 3) Stories, articles, paragraphs, sentences, directions or pictures; 4) Signs, price tags, advertisements or product labels; 5) Measurement scales or diagrams; 6) Selection of correct picture or aural response from oral cue.

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